Combined Author Index

Aaronson, H.I. 241-276A
Abbaschian, R. 403-415A
Ablitzer, D. 27-38B
Aboulfatah, M. 2667-2678A
Adams, B.L. 819-831A
Adler, P.N. 2763-2771A
Agnew, S.R. 2593-2596A
Ahmed, M. 2145-2150A
Ahuja, S. 749-753B
Aikin, B.J.M. 647-657A
2465-2471A
Alam, M.K. 1295-1306B
Ali, A. 2145-2150A
Allison, J.E. 2487-2496A
2545-2557A
2731-2741A
Alonso, A. 1423-1432B
Anand, L. 989-992A
Anderson, C.D. 61-66A
67-72A
Anderson, I.E. 21-26A
35-42A
Anderson, T.J. 91-100B
Ando, S. 743-750A
Ando, T. 1187-1193A
Antolovich, S.D. 397-401A
Anzai, K. 542-544B
Argyropoulos, S.A. 1009-1022B
Arsenault, R.J. 187-196A
1879-1882A
Asai, S. 259-264B
537-538B
Asthana, R. 1673-1677A
1673-1677A
2119-2125A
Asundi, M.K. 2429-2442A
Ayer, R. 1943-1955A
Ayers, J.D. 809-818A

Babu, S.R. 463-473B
Backerud, L. 481-491A
Baek, W.H. 2411-2416A
Bagdi, P.K. 1753-1760A
Bai, D.Q. 2151-2159A
Baker, I. 283-292A
Banerjee, S. 495-501A
Bartels, A. 1795-1806A
Bassim, M.N. 361-367A
Bate, P.S. 1085-1093A
2679-2689A
2691-2699A
Baudin, T. 2299-2311A
Bayazitoglu, Y. 737-748B
Bayuzick, R.J. 61-66A
67-72A
Beckermann, C. 749-753B
2787-2802A
Bellot, J.P. 27-38B
Belton, G.R. 241-258B
Bergman, R.A. 271-295B
Bernstein, I.M. 2569-2575A
Bhadeshia, H.K.D.H. 773-779A
1049-1055A
Bhattacharyya, A. 301-314A
Bieler, T.R. 1208-1212A
Biswas, S.K. 2513-2520A
Black, D.R. 1117-1124A
Blackwell, P.L. 1085-1093A
Blankenship, C.P., Jr. 833-841A
1807-1817A
Blechta, V.K. 277-287B
Boatner, L.A. 1433-1446B
Bolingbroke, R.K. 1935-1942A
Bosch, D.R. 951-958A
Bourell, D.L. 757-759A
Bradley, F.J. 539-542B
Briant, C.L. 843-851A
1073-1084A
Bridges, R.L. 369-377A
379-388A
Briggs, R.A. 1257-1264B
Bright, D.S. 2279-2288A
Brilloit, P. 75-89B
Brimacombe, J.K. 795-808A
917-935B
Bristow, B.M. 1819-1826A
Brooks, A. 1983-1991A
Brown, S. 1107-1116A
Bttger, A. 1965-1973A
Buchheit, T.E. 853-863A
Bustnes, J.A. 475-480B

Cahoon, J.R. 105-112A
2721-2730A
Campbell, J.B. 1555-1574A
Cantor, B. 1195-1204A
Cao, W.D. 1897-1907A
1909-1917A
Carmichael, C.A. 2593-2596A
Cerezo, A. 1221-1239B
1233-1239B
1241-1249B
1251-1256B
Cernik, R.J. 1965-1973A
Cetlin, P.R. 1543-1553A
Chakraborti, N. 617-627B
Chan, K.S. 113-125A
569-583A
1095-1106A
1531-1542A
1531-1542A
2473-2486A
Chang, Y.C. 1461-1470A
Chao, C.Y. 1957-1963A
Chaskar, V. 101-111B
Chatterjee, A. 315-326A
Chaturvedi, M.C. 1169-1179A
2181-2187A
Chaubal, P.C. 975-985B
Chen, J.H. 659-667A
1381-1389B
Chen, L. 1355-1361B
Chen, T.T. 457-462B
997-1007B
Chen, W. 1355-1361B
Chen, W.C. 1307-1320B
Chen, Y.-C. 881-888B
889-897B
Cheong, B. 2605-2611A
Chi, P. 2279-2288A
Chiba, A. 735-742A
Chidiac, S.E. 795-808A
Cho, K.-M. 895-900A
901-912A
2217-2224A
Cho, W.S. 1785-1793A
Choi, J. 1733-1743A
Choi, W.B. 895-900A
Choo, W.K. 1039-1047A
Choo, W.Y. 2217-2224A
Chopra, M.A. 1661-1669A
Chou, C.-P. 1057-1065A
Chou, C.P. 1671-1673A
Chou, T.S. 773-779A
Choudhury, A. 1897-1907A
1909-1917A
Chow, Y.T. 81-90B
Chu, M.G. 2358-2362A
2803-2805A
Chu, W. 959-962A
Chun, B.S. 192-197B
Chun, J.-H. 1187-1193A
Churn, K.-S. 2411-2416A
Clewley, J.D. 867-873B
1471-1479A
2623-2627A
Cohen, M. 2585-2589A
Collins, S.R. 2701-2708A
Coltters, R. 205-208B
Cortie, M.B. 1045-1053B
Costa, J.E. 161-174A
Courtney, T.H. 175-185A
647-657A
2465-2471A
Cramb, A.W. 5-10B
Cui, J. 2596-2598A

Dahms, M. 1517-1526A
Danis, M. 2667-2678A
Dantzer, P. 1471-1479A
2623-2627A
Darolia, R. 1363-1371B
Das, R. 197-200B
Das, R.P. 937-945B
Das, S. 1077-1086B
David, S.A. 399B
1433-1446B
Davidson, D.L. 1555-1574A
Davis, L.C. 2487-2496A
de Bussac, A. 397-401A
de Groh, H.C., III 749-753B
Debroy, T. 145-155B
Delagi, R.G. 15-20A
Den Ouden, G. 1835-1843A
Deshpande, U. 2061-2071A
Devincent, S.M. 53-60A
Dey, G.K. 2429-2442A
2709-2719A
Diao, Q.Z. 963-973A
Dimiduk, D.M. 501-504A
Ding, P. 1265-1272B
Dixit, S.G. 563-570B
Dixon, D.G. 157-169B
1087-1102B
Doherty, R.D. 2417-2427A
Dollar, M. 1993-2000A
Downing, H.L. 7-14A
21-26A
Du, S. 707-709B
Du, W. 707-709B
Dube, R.K. 1753-1760A
Duesbery, M. 2225-2232A
Duffó, G.S. 425-433A
Duffy, J. 901-912A
Dunand, D.C. 2161-2170A
Dutrizac, J.E. 457-462B
997-1007B
Dyck, K. 1589-1596A
Dymek, S. 1993-2000A

Edmonds, D.V. 781-793A
Egan, J.J. 729-735B
Elices, M. 1575-1588A
Elliott, J.F. 629-638B
Ellis, D.L. 43-52A
Ellis, J.R. 1597-1610A
Ellis, T.W. 21-26A
Ellison, K.H. 2001-2007A
Elmer, J.W. 1877-1878A
Emadi, D. 1055-1063B
Embury, J.D. 713-719A
Era, H. 751-756A
Eric, R.H. 301-308B
987-995B
Eriksson, G. 795-805B
807-816B
817-825B
Espiell, F. 827-837B

Fabietti, L.M. 3361-3368A
Fernández, M. 827-837B
Fitzner, K. 1827-1834A
Flanagan, T.B. 867-873B
1471-1479A
2623-2627A
Flanagan, W.F. 553-559A
975-979A
Fleischer, R.L. 227-230A
759-763A
Foerch, R. 1321-1332B
Forster, J.A. 15-20A
Fox, A.G. 2001-2007A
Fray, D.J. 605-615B
Fredriksson, H. 2577-2583A
Friedl, J. 457-462B
Fripp, A.L. 91-100B
Fritzemeier, L.G. 27-34A
Fruehan, R.J. 441-447B
Fugate, D.W. 171-178B
Fujii, H. 1391-1397B
Fujikawa, S.-I. 277-282A
Fujita, M. 2289-2297A
Fukuoka, C. 2209-2216A
Fukuoka, H. 1773-1783A
Funkenbusch, P.D. 1345-1354B

Galvele, J.R. 425-433A
Gandin, Ch.-A. 467-479A
Gangloff, R.P. 1807-1817A
2751-2762A
Ganguly, C. 2653-2656A
García-Cordovilla, C. 1423-1432B
Garrison, W.M., Jr. 161-174A
Gaskell, D.R. 59-62B
265-269B
Gerberich, W.W. 343-350A
535-543A
German, R.M. 1745-1752A
2369-2377A
Ghomashchi, M.R. 2171-2180A
Ghonem, H. 1321-1332B
Gibson, E.D. 7-14A
Gigliotti, M.F.X. 1761-1771A
Gilbert, J.L. 669-680A
Gill, H.S. 2383-2391A
Gillen, G. 2279-2288A
Girot, F. 2667-2678A
Goetz, R.L. 2039-2047A
Gokcen, N.A. 53-58B
73-82A
Gonzalez-Hernandez, J. 2355-2358A
Gope, N. 315-326A
Gordon, J.A. 1450-1451B
Goto, S. 1882-1889A
Gou, H. 179-188B
Gowri, S. 2810-2812A
Graf, A. 2497-2501A
2503-2512A
Grieveson, P. 947-953B
955-961B
Griffith, J.L. 369-377A
379-388A
Grong, Ø. 2321-2345A
2347-2353A
Grong, T. 2321-2345A
2347-2353A
Grugel, R.N. 975-979A
Gruzleski, J.E. 1055-1063B
1845-1856A
Gungor, M.N. 701-712A
Guo, P. 959-962A
Gupta, A.K. 2181-2187A
Guthrie, R.I.L. 639-648B
649-655B
755-765B
767-777B
779-788B

Haarberg, G.M. 729-735B
Haasen, P. 225-239B
1001-1015A
Habib, K. 1527-1530A
Hahn, G.T. 351-359A
Hajra, J.P. 1655-1660A
Hamano, R. 127-139A
Hamilton, C.H. 493-495A
Han, J.W. 767-777B
779-788B
Hansen, N. 2021-2037A
Hanzaki, A.Z. 2657-2665A
Haque, R. 511-520B
Harada, H. 1049-1055A
Hardwick, D.A. 27-34A
Hariprasad, S. 865-873A
Hashmi, F.H. 230-233A
2145-2150A
Hawbolt, E.B. 795-808A
1307-1320B
Hayes, P.C. 39-51B
He, A.Q. 225-227A
Hecht, R.L. 327-333A
Hemker, K.J. 335-341A
Hendrix, J.L. 157-169B
1087-1102B
Henry, M.F. 1733-1743A
1975-1981A
Henshall, G.A. 1877-1878A
Hernandez-Morales, B. 795-808A
Heus, R.J. 729-735B
Hiatt, D.R. 1819-1826A
Himbeault, D.D. 2721-2730A
Hirao, M. 1773-1783A
Hirth, J.P. 1450-1451B
Hiskey, J.B. 17-25B
Hoburg, J.F. 171-178B
Hoch, M. 309-315B
Hodgson, P.D. 2657-2665A
Hofmeister, W.H. 61-66A
67-72A
Hokamoto, K. 2289-2297A
Holliday, R.I. 189-192B
Hong, S.H. 2643-2652A
Hono, K. 2605-2611A
Hook, R.E. 2009-2019A
Hopkins, J.A. 669-675B
Horacsek, K. 843-851A
Horacsek, O. 843-851A
Hosford, W. 2497-2501A
2503-2512A
Howe, J.M. 1461-1470A
Hu, X. 875-881A
Hu, Z. 1355-1361B
Hu, Z.Q. 857-865B
2443-2450A
2451-2464A
Huang, H. 343-350A
535-543A
Huang, X. 379-393B
Huanzhen, L. 557-561B
Hubbard, K.M. 215-224A
Hughes, D.A. 2021-2037A
Hwang, S.J. 1993-2000A

Ikeda, T. 599-604B
Imamura, K. 735-742A
743-750A
Ip, S.W. 657-668B
Irons, G.A. 179-188B
695-705B
Ishii, M. 139-144B
Iwai, K. 259-264B
Izeki, Y.-I. 277-282A
Izuma, T. 2289-2297A
Izumi, O. 141-150A

Jacob, K.T. 1655-1660A
Jacobson, D.L. 951-958A
Jacobson, N.S. 481-486B
1212-1214A
Jain, N.C. 445-457A
Jain, V. 2061-2071A
Jakobsson, A. 1023-1030B
Jarfors, A.E.W. 2577-2583A
Jaworsky, A.P. 2417-2427A
Jena, A.K. 2181-2187A
Jerina, K.L. 865-873A
Jerman, G.A. 35-42A
Jervis, T.R. 215-224A
Jha, S.C. 15-20A
Jiang, X. 2596-2598A
Jimbo, I. 5-10B
Jin, Z.-P. 2137-2144A
Johari, G.P. 2743-2749A
Johnson, J.L. 2369-2377A
Johnsson, M. 481-491A
Jonas, J.J. 1543-1553A
1589-1596A
2151-2159A
Jones, J.W. 2731-2741A
Joo, S. 755-765B
767-777B
779-788B

Kailas, S.V. 2513-2520A
Kalidindi, S.R. 989-992A
Kang, S.J.L. 2411-2416A
Kang, Y. 192-197B
Kassner, M.E. 1819-1826A
1877-1878A
Kato, E. 200-203B
Katz, Y. 343-350A
Kawabata, T. 141-150A
Keller, R.R. 343-350A
Kennedy, J.R. 2763-2771A
Kennedy, R.L. 1897-1907A
1909-1917A
Kerr, H.W. 1065-1076B
Khadkikar, P.S. 83-94A
Khalid, F.A. 781-793A
Khan, A.Q. 230-233A
2145-2150A
Kim, B.C. 1133-1141A
Kim, E.-P. 2411-2416A
Kim, I. 717-727B
Kim, J.-D. 2613-2621A
Kim, J.Y. 1785-1793A
Kim, K.C. 895-900A
Kim, N.J. 1785-1793A
Kim, S. 975-979A
Kim, Y.-W. 113-125A
Kimura, K. 139-144B
Kirkaldy, J.S. 1689-1721A
Kishitake, K. 751-756A
Kitamura, K. 339-347B
Klassen, R.J. 1878-1879A
Kleppa, O.J. 947-950A
1827-1834A
Knott, J.F. 523-534A
Kobayashi, T. 883-894A
Koeppe, C. 1795-1806A
Komvopoulos, K. 1621-1629A
Konishi, Y. 537-538B
Korevaar, B.M. 1723-1731A
Kosco, J.B. 681-687A
Koss, D.A. 681-687A
Koul, A.K. 1373-1380B
Krajewski, P.E. 2731-2741A
Kraus, H.G. 399B
Krauss, G. 2263-2277A
2521-2529A
Krausz, A.S. 1373-1380B
Krawitz, A.D. 187-196A
Krishnan, S. 67-72A
Krotz, P.D. 15-20A
Krueger, D.W. 277-287B
Kruesi, W.H. 605-615B
Kumar, A.M. 351-359A
1450-1451B
Kumar, P. 1107-1116A
Kumar, S.G. 1031-1035B
Kuntz, T.A. 1117-1124A
Kunze, K. 819-831A
Kutty, T.R.G. 2653-2656A
Kwon, D. 1125-1131A
1133-1141A
Kwon, H. 508-511A
Kyed, P.J. 1678-1681A
Kyllo, A.K. 571-582B
583-591B

Laabs, F.C. 7-14A
Lacoste, E. 2667-2678A
Lahrman, D.F. 1363-1371B
Laird, G., II 981-988A
Laitinen, E. 685-693B
Lakshmikantha, M.G. 617-628A
Langberg, D.E. 1037-1044B
Lapides, M.E. 2209-2216A
Larsen, D.M. 409-417B
Laughlin, D.E. 2605-2611A
Lavernia, E.J. 701-712A
Lebrun, J.L. 389-396A
Lederich, R.J. 865-873A
Lee, B.-J. 1017-1025A
1919-1933A
Lee, C.S. 2217-2224A
Lee, F.T. 39-51B
Lee, H.-C. 1333-1343B
Lee, J.-L. 1399-1408B
Lee, J.S. 1039-1047A
Lee, K.B. 508-511A
Lee, M.C.Y. 2379-2382A
Lee, M.S. 947-953B
955-961B
Lee, S. 895-900A
901-912A
1125-1131A
1133-1141A
2217-2224A
Lee, S.W. 1333-1343B
Lesuer, D.R. 1647-1653A
Levi, C.G. 1481-1496A
Lewandowski, J.J. 601-608A
609-615A
2531-2543A
Li, E.K.H. 1345-1354B
Li, G.H. 2383-2391A
Li, P. 751-756A
Lichter, B.D. 553-559A
975-979A
Lin, H.C. 293-299A
2189-2194A
Lin, H.K. 11-15B
Linkson, P.B. 409-417B
Liu, C.D. 361-367A
Liu, D.S. 601-608A
609-615A
Liu, H. 1631-1645A
Liu, J.T. 1065-1076B
Liu, T.T. 1957-1963A
Liu, W.J. 2195-2207A
Liu, Y. 151-159A
1497-1505A
Liu, Y.L. 857-865B
Liu, Z. 1355-1361B
Llorca, J. 1575-1588A
Lloyd, D.J. 197-207A
Lo, Y.C. 1205-1208A
Locci, I.E. 83-94A
809-818A
Lombard, C.M. 2039-2047A
Lossius, L.P. 75-89B
Louat, N. 2225-2232A
Louhenkilpi, S. 685-693B
Louis, E. 1423-1432B
Lu, W.-K. 179-188B
317-323B
Ludtka, G.M. 369-377A
379-388A
Luo, A. 95-104A
Luo, W. 867-873B
1471-1479A
2623-2627A

Ma, D. 317-323B
Ma, L. 2596-2598A
Maccagno, T.M. 1543-1553A
1589-1596A
Machmeier, P.M. 1943-1955A
Mackiewicz-Ludtka, G. 379-388A
Madsen, A. 1321-1332B
Maeda, M. 325-331B
599-604B
Maeder, G. 389-396A
Mai, C. 2743-2749A
Majumdar, B.S. 1597-1610A
Malhotra, A.K. 1611-1619A
Mandziej, S.T. 545-552A
Mannan, S.L. 913-924A
Manzano-Ramirez, A. 2355-2358A
Margolin, H. 435-443A
875-881A
2763-2771A
Marsh, P.G. 535-543A
Marshall, G.J. 1935-1942A
Martín, A. 1575-1588A
Martin, C.L. 1107-1116A
Martínez, L. 827-837B
Mascarenhas, W.J. 677-684B
Massalski, T.B. 1027-1037A
Mathews, T. 1655-1660A
Matlock, D.K. 1678-1681A
2521-2529A
Maurice, D. 175-185A
Mazumdar, D. 639-648B
649-655B
McCammon, C.A. 101-111B
McCay, M.H. 669-675B
McCay, T.D. 669-675B
McCullough, C. 1481-1496A
McDanels, D.L. 43-52A
McFeaters, L.B. 441-447B
McKee, D.W. 759-763A
McNelley, T.R. 2589-2593A
McNelley, T.T. 2001-2007A
McNulty, J.C. 2233-2245A
McQuay, P.A. 1295-1306B
Mecking, H. 1795-1806A
Meguid, S.A. 105-112A
Mehrotra, G.M. 481-486B
Mehrotra, S.P. 521-535B
Mei, Z. 689-700A
Mendiratta, M.G. 501-504A
Meschel, S.V. 947-950A
Metzbower, E.A. 875-880B
Meyer, D.G. 289-300B
Miao, H. 959-962A
Michal, G.M. 53-60A
83-94A
2701-2708A
Mikrovas, A.C. 1009-1022B
Miles, M.P. 1143-1151A
Miller, D.S. 1481-1496A
Minato, H. 735-742A
743-750A
Mino, K. 1049-1055A
Mitra, S. 2589-2593A
Mittemeijer, E.J. 1965-1973A
Mohanty, A.K. 197-200B
Mohanty, P.S. 617-627B
1845-1856A
Moody, N.R. 161-174A
1450-1451B
Mori, K. 113-120B
Morinaga, M. 2443-2450A
2451-2464A
Morris, D.R. 839-846B
Morris, J.W., Jr. 689-700A
1281-1294B
Mortensen, A. 2161-2170A
Mourao, M.B. 629-638B
Mueller, M.P. 2569-2575A
Mukherjee, A. 511-520B
Mukherjee, A.K. 417-424A
1208-1212A
Mukherjee, T. 315-326A
Mukhopadhyay, P. 2709-2719A
Mukhopadhyaya, P. 495-501A
Mukunda, P.G. 937-945B
Mundra, K. 145-155B
Murai, T. 537-538B
Murakami, K. 1049-1055A
Murali, K. 2049-2059A
Murata, Y. 2443-2450A
2451-2464A
Murthy, G.G.K. 629-638B

Nagarathnam, K. 1621-1629A
Nagasaka, Y. 795-808A
Nakae, H. 1391-1397B
Nakagawa, Y.G. 2209-2216A
Nakahata, M. 487-492B
Nakamura, M. 449-455B
Nakamura, Y. 1447-1449B
Nakkalil, R. 1169-1179A
Nam, S.W. 2643-2652A
Narasimhan, K. 1143-1151A
Narayanan, R. 91-100B
Narciso, J. 1423-1432B
Nash, P. 1993-2000A
Nassaralla, C.L. 963-973B
Nastac, L. 2107-2118A
Nastasi, M. 215-224A
1027-1037A
Nava, Z. 205-208B
Nava-Vazquez, E. 2355-2358A
Nekkanti, R. 1295-1306B
Newaz, G.M. 1597-1610A
Newbury, D.E. 2279-2288A
Nieminen, R. 685-693B
Nishida, M. 735-742A
743-750A
Nix, W.D. 335-341A
Niyama, E. 542-544B
Noebe, R.D. 2119-2125A
Noh, J.W. 2411-2416A
Nordine, P.C. 67-72A
Nourbakhsh, S. 435-443A
875-881A

Oakes, R.E. 369-377A
379-388A
O'Connell, G.J. 63-73B
Oden, L.L. 53-58B
Ogawa, O. 1882-1889A
Ohara, N. 200-203B
Oishi, T. 449-455B
Ojebuoboh, F. 839-846B
Okabe, T.H. 449-455B
Okada, K. 1391-1397B
Oldfield, F.M. 2313-2319A
Oldfield, W. 2313-2319A
Ono, H. 487-492B
907-909B
Ono, K. 449-455B
Opila, E.J. 1212-1214A
Ortiz, M. 389-396A
Osen, K.S. 729-735B
Øye, H.A. 75-89B

Palacios, J. 265-269B
Pamies, A. 1423-1432B
Pan, Y.-T. 1399-1408B
Pandi, R. 2657-2665A
Park, J.K. 2613-2621A
Pasow, C.H. 1187-1193A
Patisson, F. 27-38B
Patterson, B.R. 1497-1505A
Patwardhan, A.K. 445-457A
Paul, A.J. 1077-1086B
Peddada, S.R. 59-62B
Pehlke, R.D. 73-82A
113-120B
Pelton, A.D. 795-805B
807-816B
817-825B
Penelle, R. 2299-2311A
Peng, S.-W. 1057-1065A
Peng, S.W. 1671-1673A
Perez, R.J. 701-712A
Perng, T.-P. 459-464A
Pesic, B. 419-431B
717-727B
Piascik, R.S. 2751-2762A
Piehler, H.R. 669-680A
Pineau, A. 2247-2261A
Pochettino, A.A. 389-396A
Pollard, J. 1819-1826A
Powell, G.L.F. 981-988A
Prasad, Y.V.R.K. 2513-2520A
Premkumar, M.K. 2358-2362A
2803-2805A
Purtscher, P.T. 2521-2529A

Qi, P. 17-25B
Qiao, L. 959-962A
Qiu, C. 629-645A
2137-2144A
2393-2409A

Rachev, I.P. 339-347B
Radhakrishnan, B. 1409-1422B
2773-2785A
Ramachandra, C. 763-766A
1273-1280B
Ramadasan, E. 495-501A
Ramaswami, B. 1878-1879A
Ramnarayan, V. 2061-2071A
Rankin, W.J. 1037-1044B
Rao, J.G. 2559-2568A
Rao, K.B.S. 913-924A
Rao, K.S. 937-945B
Rao, K.T.V. 585-600A
721-734A
Rao, P. 445-457A
2709-2719A
Rappaz, M. 467-479A
1433-1446B
Rawers, J.C. 73-82A
Ray, H.S. 511-520B
937-945B
Ray, S. 151-159A
Reddy, G.S. 677-684B
Reddy, J.N. 677-684B
Reddy, R.G. 1031-1035B
Reiso, O. 2629-2641A
Rhee, W.H. 435-443A
Rhodes, C.G. 27-34A
Rhyu, J.W. 901-912A
Richards, G.G. 101-111B
571-582B
583-591B
Richards, N.L. 1169-1179A
Ritchie, R.O. 585-600A
721-734A
2233-2245A
Rizzo, H.F. 1027-1037A
Rodriguez, P. 913-924A
Roh, B. 1125-1131A
Rohatgi, P.K. 151-159A
Romero-Serrano, A. 817-825B
Rösch, R. 208-212B
Rosen, R.S. 1877-1878A
Rubin, C.A. 351-359A
Ruiz, J. 1575-1588A
Rydin, R.W. 175-185A
Ryum, N. 2629-2641A

Sacco, A., Jr. 1257-1264B
Sadananda, K. 2225-2232A
Sahin, O. 435-443A
Sakai, T. 325-331B
Sakaki, T. 301-314A
Salam, I. 230-233A
Salwén, A. 1507-1516A
Samarasekera, I.V. 795-808A
1307-1320B

Samuel, A.M. 1631-1645A
1857-1868A
Samuel, F.H. 1631-1645A
1845-1856A
1857-1868A
Sandhya, R. 913-924A
Sano, N. 333-337B
339-347B
487-492B
907-909B
Sarafianos, N. 2095-2106A
Sarma, D.S. 315-326A
Sarma, G.M.K. 1273-1280B
Sassa, K. 259-264B
Sastry, S.M.L. 585-600A
865-873A
Sathuvalli, U.B. 737-748B
Sawicki, J.A. 457-462B
Schmauder, S. 1363-1371B
Schneibel, J.H. 1363-1371B
2593-2596A
Schonewille, R.H. 63-73B
Schulson, E.M. 283-292A
Sears, B. 91-100B
Seeger, J. 1795-1806A
Seetharaman, S. 203-204B
475-480B
1023-1030B
Segarra, M. 827-837B
Sekhar, J.A. 617-628A
3361-3368A
Sellars, C.M. 2171-2180A
Semiatin, S.L. 1295-1306B
2039-2047A
Sergent, R.H. 419-431B
Sha, W. 1221-1239B
1233-1239B
1241-1249B
1251-1256B
Shah, R. 1661-1669A
Shamsi, M.R.R.I. 521-535B
Shao, Y. 1355-1361B
Sheng, Y.Y. 695-705B
Sherby, O.D. 1647-1653A
Sherwood, D.J. 493-495A
Shi, C.X. 857-865B
Shi, G. 1265-1272B
Shi, N. 187-196A
1879-1882A
Shih, S.-T. 459-464A
Shim, S.C. 333-337B
Shimpo, R. 1447-1449B
1882-1889A
Shockey, D.A. 883-894A
Shudo, J. 735-742A
Sichen, D. 203-204B
475-480B
1023-1030B
Sigworth, G.K. 349-364B
365-377B
481-491A
Sil, D. 1153-1161A
Siles, J.L. 1143-1151A
Singh, A.K. 763-766A
1273-1280B
Singh, P.M. 2531-2543A
Sircar, S. 395-397B
Siu, S.C. 721-734A
Skaland, T. 2321-2345A
2347-2353A
Slavik, D.C. 1807-1817A
Smith, G.D.W. 1221-1239B
1233-1239B
1241-1249B
1251-1256B
Smith, L.F. 187-196A
Smugeresky, J.E. 161-174A
Soboyejo, W.O. 585-600A
Sohn, H.Y. 192-197B
975-985B
Sole, K.C. 17-25B
Sommer, J.L. 2161-2170A
Song, H.-S. 2411-2416A
Soni, K.K. 2279-2288A
Spanos, G. 809-818A
Spitzig, W.A. 7-14A
Srinivasan, R. 2061-2071A
Srivastava, D. 495-501A
Staley, J.T. 2417-2427A
Starink, M.J. 1723-1731A
Starke, E.A., Jr. 833-841A
1807-1817A
Stefanescu, D.M. 2107-2118A
Stevenson, R. 925-934A
Stoloff, N.S. 561-567A
Stoltzfus, J. 395-397B
Stoop, B.T.J. 1835-1843A
Strid, J. 2629-2641A
Suito, H. 121-130B
131-138B
Suk, J.I. 2643-2652A
Sun, H. 113-120B
Sun, W.P. 2151-2159A
Sundararajan, T. 617-627B
Svendsen, L. 2577-2583A
Swisher, J.H. 593-598B
Syn, C.K. 1647-1653A

Tamaoki, R. 259-264B
Tamura, F. 121-130B
Tamura, T. 141-150A
Tanaka, M. 639-648B
Tao, S. 713-719A
Tarby, S.K. 909-910B
Tauqir, A. 230-233A
Taylor, K.A. 2585-2589A
Tensi, H.M. 208-212B
Terry, B.S. 947-953B
955-961B
Tewari, R. 2709-2719A
Tewari, S.N. 1661-1669A
2119-2125A
Thiehsen, K.E. 1819-1826A
Thomas, B.G. 379-393B
Thompson, A.W. 523-534A
2569-2575A
Thompson, R.G. 1409-1422B
2773-2785A
Thompson, W. 1983-1991A
Thonstad, J. 729-735B
Tintillier, R. 467-479A
Toguri, J.M. 63-73B
657-668B
847-856B
1055-1063B
Tojo, K. 1773-1783A
Tolle, M.C. 1877-1878A
Tomioka, K. 131-138B
Tsai, H.L. 963-973A
Tsai, T.Y. 1671-1673A
Tsu, I.-F. 459-464A
Tsukihashi, F. 333-337B
339-347B
487-492B
907-909B
Turkdogan, E.T. 963-973B
Tzi-Kang, C. 197-207A

Utigard, T. 271-295B

Valiev, R.Z. 417-424A
Valsan, M. 913-924A
Van Aken, D.C. 1611-1619A
2545-2557A
van der Merwe, P.F. 433-440B
van Deventer, J.S.J. 433-440B
Van Genderen, M.J. 1965-1973A
van Mourik, P. 1723-1731A
Vander Sande, J.B. 2585-2589A
Varin, R.A. 935-946A
2383-2391A
Varma, S.K. 1153-1161A
2559-2568A
Vasudevan, A.K. 2225-2232A
Vedula, K. 83-94A
Venkateswara Rao, K.T. 2233-2245A
Verhoeven, J.D. 7-14A
21-26A
35-42A
Vinokur, B. 1163-1168A
2805-2810A
Viswanathan, U.K. 2429-2442A
2653-2656A
Vitek, J.M. 399B
1433-1446B
Vitta, S. 1869-1875A
Vivès, C. 493-510B
Vohra, D. 593-598B
Vold, C.L. 809-818A
Vyletel, G.M. 2545-2557A

Wadekar, S.L. 2709-2719A
Wadley, H.N.G. 1117-1124A
Wadley, N.G. 289-300B
Wagner, F.E. 457-462B
Wagoner, R.H. 1143-1151A
Wall, R.N. 951-958A
Wallinder, M. 2577-2583A
Wang, C. 349-364B
365-377B
Wang, C.Y. 2787-2802A
Wang, G.-X. 1517-1526A
Wang, G.Z. 659-667A
Wang, J.T. 225-227A
Wang, K.Y. 225-227A
Wang, S.C. 2127-2130A
Wang, Z. 659-667A
1381-1389B
2083-2093A
Wang, Z.Z. 277-287B
Watanabe, Y. 339-347B
Watson, T.J. 2071-2081A
Weatherly, G.C. 1878-1879A
Webb, G. 397-401A
Weber, J.K.R. 67-72A
Weber, P. 987-995B
Weckman, D.C. 1065-1076B
Weertman, J.R. 327-333A

Wei, C. 875-881A
Wei, P.S. 81-90B
Weidman, P.D. 749-753B
Weiss, I. 2061-2071A
Weiss, J. 2247-2261A
Weiss, W.L. 757-759A
Weng, G.J. 301-314A
2049-2059A
Wert, J.A. 853-863A
2071-2081A
Williams, D.B. 2279-2288A
Wilson, D.B. 395-397B
Winnicka, M.B. 935-946A
Wolfenstine, J. 1647-1653A
Won, C.W. 192-197B
Woodfield, A.P. 1761-1771A
Wright, S.I. 819-831A
Wu, J. 1181-1185A
Wu, Q. 2596-2598A
Wu, S.K. 293-299A
1205-1208A
2189-2194A
Wu, T. 1181-1185A
Wu, X.J. 1373-1380B

Xiao, J. 959-962A
Xiao, L. 403-415A
Xiao, T. 1067-1071A
2743-2749A
Xu, P. 1281-1294B

Yaguchi, H. 504-508A
Yahata, T. 599-604B
Yamasaki, N. 557-561B
Yan, C. 1381-1389B
Yan, X.Y. 1037-1044B
Yang, A. 2083-2093A
Yang, H.S. 417-424A
Yang, Z. 707-709B
Yao, J. 105-112A
Yeh, M.T. 2189-2194A
Yeom, S.J. 1975-1981A
Yoo, Y.S. 1733-1743A
Yoon, D.Y. 1733-1743A
1975-1981A
Yoshiki-Gravelsins, K.S. 847-856B
Yoshimura, H. 139-144B
Yoshizawa, H. 2209-2216A
Youdelis, W.V. 95-104A
Youzbashi, A.A. 563-570B
Yuan, J. 283-292A
Yue, S. 1543-1553A
1589-1596A
2151-2159A
2657-2665A
Yukawa, N. 2443-2450A
2451-2464A
Yun, H.M. 209-214A

Zaccone, M.A. 2263-2277A
Zacharia, T. 399B
Zakhem, R. 749-753B
Zelin, M.G. 417-424A
1208-1212A
Zhang, D.L. 1195-1204A
Zhang, J. 701-712A
Zhang, J.S. 2443-2450A
2451-2464A
Zhang, Y. 857-865B
Zhen, X. 789-794B
Zheng, M. 789-794B
Zhirui, W. 197-207A
Zhong, L. 553-559A
Zhou, S. 1265-1272B
Zhu, L. 659-667A
Ziegler, D.P. 899-906B
Zielinski, W. 535-543A
Zocco, T.G. 215-224A

Combined Subject Index

Abatement
See Pollution abatement

Abatement (pollution)
See Pollution abatement

Abrading
See Abrasion

Abrasion, Heating effects
Solidification and Solid-State Transformation Mechanisms in Silicon Alloyed High-Chromium White Cast Irons. 981-988A

Abrasion resistance, Heating effects
Solidification and Solid-State Transformation Mechanisms in Silicon Alloyed High-Chromium White Cast Irons. 981-988A

Absolute viscosity
See Viscosity

Acid leaching
See Nitric acid leaching

Actinide metal alloys
See Uranium base alloys

Activated sintering
Selective Laser Sintering of Intermetallics. 757-759A
Reaction Sintering of Cold-Extruded Elemental Powder Mixture Ti—48Al. 1517-1526A

Activation energy
Reduction Rate of SiO_2 in Slag by Carbon-Saturated Iron. 113-120B
Application of a Nonisothermal Thermogravimetric Method to the Kinetic Study of the Reduction of Metallic Oxides. II. A Theoretical Treatment of Powder Bed Reduction and Its Application to the Reduction of Tungsten Oxide by Hydrogen. 475-480B
Determination of Diffusion Coefficients of Strontium in Liquid Aluminum. 707-709B
Kinetics of the Dissolution of Pure Silver and Silver—Gold Alloys in Nitric Acid Solution. 827-837B
Effects of Silicon Addition on the First Stage of Precipitation in the Al—1.52% Cu—0.75% Mg Alloy. 2181-2187A
Effect of Stretching on the Precipitation Kinetics of an Al—2.0Li—2.8Cu—0.5Mg(—0.13Zr) Alloy. 2613-2621A
Dilatometric Technique for Evaluation of the Kinetics of Solid-State Transformation of Maraging Steel. 2653-2656A

Activation entropy
See Activation energy
Entropy

Activity (chemical), Alloying effects
The Activity of $CuO_{0.5}$ Along the Air Isobars in the Systems Cu—O—SiO_2 and Cu—O—CaO at 1300°C. 59-62B

Activity coefficients
See Activity (chemical)

Acurad process
See Die casting

Additives
See Master alloys

Adhesive wear, Composition effects
Tribological Characteristics of Aluminum—50 Vol.% Graphite Composite. 151-159A

Adhesives
See Glue

Adsorption
See also Chemisorption
How Fast Can We Go? The Status of our Knowledge of the Rates of Gas—Liquid Metal Reactions. 241-258B

Adsorption, pH effects
Reaction Mechanism of Gold Dissolution With Bromine. 419-431B
The Reversibility of Adsorption of Gold Cyanide on Activated Carbon. 433-440B

Aerospace
Thermal Conductivity and Thermal Expansion of Graphite Fiber-Reinforced Copper Matrix Composites. (Conference Paper) 43-52A
Grain Growth of a Superplastic 7475 Aluminum Alloy. 493-495A
The Solidification Behavior of 8090 Al—Li Alloy. 857-865B
Hydrogen Tolerance of a Ti_3Al-Based Alloy. 1095-1106A
Residual Strain Gradient Determination in Metal Matrix Composites by Synchrotron X-Ray Energy Dispersive Diffraction. 1117-1124A
Strain-Rate Effects on High-Temperature Fracture Behavior of a 2124Al—SiC_w Composite. 1125-1131A

Aerospace engines, Materials selection
Mechanical and Oxidation Properties of AlRu-Based High-Temperature Alloys. 759-763A
Age-Hardening Behavior of Titanium Alloy Ti—6Al—5Zr—0.5Mo—0.25Si. 763-766A

Aerospace industry
See Aerospace

Age hardening
See Aging (artificial)
Aging (natural)
Precipitation hardening

Agglomerates
See Sinter (material)

Aging
See Aging (artificial)
Aging (natural)

Aging (artificial)
See also Quench aging
Transformation to Ni_5Al_3 in a 63.0 At.% Ni—Al Alloy. 83-94A
The Effect of the Precipitation of Coherent and Incoherent Precipitates on the Ductility and Toughness of High-Strength Steel. 127-139A
Influence of Long-Term Aging and Superimposed Creep Stress on the Microstructure of 2.25Cr—1Mo Steel. 315-326A
The Effect of Superimposed Hydrostatic Pressure on Deformation and Fracture. II. Particulate-Reinforced 6061 Composites. (Conference Paper) 609-615A
Age-Hardening Behavior of Titanium Alloy Ti—6Al—5Zr—0.5Mo—0.25Si. 763-766A
Mechanical Behavior of Double-Aged AA8090. 833-841A
The Microstructure of Discontinuously Precipitated Lamellae in an Austenitic Fe—42.4 wt.% Ni—4.15 wt.% Al—0.45 wt.% C Alloy. 1039-1047A
Orientation Relationships Between M_2C Carbide and the Austenite Matrix in an Fe—Mn—Al—Mo—C Alloy. 1057-1065A
Phase Chemistry and Precipitation Reactions in Maraging Steels. I. Introduction and Study of Cobalt-Containing C-300 Steel. 1221-1239B
Phase Chemistry and Precipitation Reactions in Maraging Steels. II. Cobalt-Free T-300 Steel. 1233-1239B
Phase Chemistry and Precipitation Reactions in Maraging Steels. IV. Discussion and Conclusions. 1251-1256B
Composition and Stability of Ω Phase in an Al—Cu—Mg—Ag Alloy. 1461-1470A
The Dendritic Growth of γ′ Precipitates and Grain Boundary Serration in a Model Nickel-Base Superalloy. 1733-1743A
Phase Transformations in an Fe—7.8Al—29.5Mn—1.5Si—1.05C Alloy. 1957-1963A
Early Stages of Decomposition in Iron—Carbon and Iron—Nitrogen Martensites: Diffraction Analysis Using Synchrotron Radiation. 1965-1973A
The Morphological Changes of γ′ Precipitates in a Ni—8Al (st.%) Alloy During Their Coarsening. 1975-1981A
Microstructure and Hydrogen Effects on Fracture in the Alloy A-286. 1983-1991A
Damping Characteristics of TiNi Shape Memory Alloys. 2189-2194A
The Effects of Prolonged Thermal Exposure on the Fracture and Fatigue Behavior of Aluminum—Lithium Alloy 8090. 2233-2245A
Precipitation Hardening in 350 Grade Maraging Steel. 2429-2442A
Crystallographic Orientation Relationships Among η-Ni_3Ti Precipitate, Reverted Austenite, and Martensitic Matrix in Fe—10Cr—10Ni—2W Maraging Alloy. 2643-2652A
Precipitation Hardening in Nickel—Copper Base Alloy Monel K500. 2709-2719A

Aging (natural)
Microstructural Characterisation of Near-α Titanium Alloy Ti—6Al—4Sn—4Zr—0.70Nb—0.50Mo—0.40Si. 1273-1280B
Discussion of "An Interpretation of the Carbon Redistribution Process During Aging of High-Carbon Martensite" and Authors Reply. 2585-2589A

Air induction melting
See Induction melting

Air melting
See Melting

Air pollution
Decreased Gas Consumption of a Fluidized Bed Furnace. 889-897B

Aircraft components, Casting
Elaboration of Metal Matrix Composites From Thixotropic Alloy Slurries Using a New Magnetohydrodynamic Caster. 493-510B
Solubility and Thermodynamic Properties of Li_2O in LiF—CaF_2 Melts. 1031-1035B

Aircraft components, Materials selection
Microstructural Characterisation of Near-α Titanium Alloy Ti—6Al—4Sn—4Zr—0.70Nb—0.50Mo—0.40Si. 1273-1280B
Synthesis of TiC Particulates and Their Segregation During Solidification in In Situ Processed Al—TiC Composites. 2358-2362A
Residual Stresses and Their Effects on Deformation in Particle-Reinforced Metal-Matrix Composites. 2487-2496A
Effects of Heat Treatment and Reinforcement Size on Reinforcement Fracture During Tension Testing of a SiC_p Discontinuously Reinforced Aluminum Alloy. 2531-2543A

Aircraft components, Oxidation
Service Failure of Hot-Stage Turbine Blades: the Role and Mechanisms of Oxidation Ratcheting. 2313-2319A

Aircraft engines
See Aerospace engines

Aircraft equipment
See Aircraft components

Alkali metals
See Lithium
Potassium
Sodium

Alkaline earth metal compounds
See Beryllium compounds
Calcium compounds
Magnesium compounds

Alkaline earth metals
See Barium
Beryllium
Calcium
Magnesium
Strontium

Alkaline pressure leaching
See Ammonia pressure leaching

Alloy cast iron
See Nickel iron

Alloy steels
See Chromium steels
High strength steels
Low alloy steels
Manganese steels

Alloying
See Mechanical alloying
Microalloying

Alloys
See Dispersion hardening alloys
Master alloys
Precipitation hardening alloys
Shape memory alloys

Alpha annealing
See Annealing

Alphatizing
See Annealing

Alumina
See Aluminum oxide

Aluminium
See Aluminum

Aluminum, Alloying additive
Motions of Alloying Additions in the CAS Steelmaking Operations. 649-655B

Aluminum, Alloying elements
The Measurement of the Surface Tension of Molten Fe—3.52% C—2.02% Si(—Al,—Ti,—N) Alloys by the Maximum Bubble Pressure Method. 200-203B
Deoxidation of Molten Titanium by Electron-Beam Remelting Technique. 599-604B
Motions of Alloying Additions During Furnace Tapping in Steelmaking Processing Operations. 639-648B
Thermodynamic Properties of Zinc-Rich Zinc—Aluminum Melts. 1037-1044B
Phase Chemistry and Precipitation Reactions in Maraging Steels. IV. Discussion and Conclusions. 1251-1256B

Aluminum, Binary systems
Liquidus Temperatures in the Ti—Al System. 61-66A
Optical Properties and Spectral Emissivities at 623.8 nm in the Titanium—Aluminum System. 67-72A
Thermodynamics of Iron—Aluminum Alloys at 1573K. 481-486B

Aluminum, Casting
Experimental Investigation of the Phenomenon of Centrifuging of Liquids. 463-473B
Measurement of Velocity in High-Temperature Liquid Metals. 1009-1022B

Aluminum, Composite materials
Elaboration of Metal Matrix Composites From Thixotropic Alloy Slurries Using a New Magnetohydrodynamic Caster. 493-510B
Evaluation of the Wettability of Liquid Aluminum With Ceramic Particulates (SiC, TiC, Al_2O_3) by Means of Pressure Infiltration. 1423-1432B
Theoretical Calculation of Anisotropic Creep and Stress—Strain Behavior for a Class of Metal-Matrix Composites. 2049-2059A
Synthesis of Bulk and Reinforced Nickel Aluminides by Reactive Infiltration. 2161-2170A
Synthesis of TiC Particulates and Their Segregation During Solidification in In Situ Processed Al—TiC Composites. 2358-2362A
Residual Stresses and Their Effects on Deformation in Particle-Reinforced Metal-Matrix Composites. 2487-2496A
Numerical Simulation of the Infiltration of Fibrous Preforms by a Pure Metal. 2667-2678A
Creep Regimes for Directionally Solidified Al—Al_3Ni Eutectic Composite. 2721-2730A
Mechanism of TiC Formation in Al/TiC In Situ Metal-Matrix Composites. 2803-2805A

Aluminum, Crystal growth
How Are New Orientations Generated During Primary Recrystallization?en 225-239B

Aluminum, Diffusion
Determination of Diffusion Coefficients of Strontium in Liquid Aluminum. 707-709B

Aluminum, Mechanical properties
The Combined Effect of Grain Size and Strain Rate on the Dislocation Substructures and Mechanical Properties in Pure Aluminum. 1153-1161A
The Effects of Combined Strain-Path and Strain-Rate Changes in Aluminum. 2679-2689A
Strain Path Change Effects in the Local Necking of Aluminum Sheet and in the Tension of Internally Pressurized Tubes. 2691-2699A

Aluminum, Metallography
Orientation Imaging: the Emergence of a New Microscopy. 819-831A

Aluminum, Microstructure
How Are New Orientations Generated During Primary Recrystallization?en 1001-1015A

Aluminum, Powder technology
On the Development of Constitutive Relations for Metallic Powders. 2071-2081A

Aluminum, Reactions (chemical)
Penetration and Chemical Reactions in Carbon Cathodes During Aluminum Electrolysis. I. Laboratory Experiments. 75-89B
Measurement of Electronic Conduction in Cryolite Alumina Melts and Estimation of Its Effect on Current Efficiency. 729-735B
Stability of Metal/Electrolyte Interface in Hall—Héroult Cells: Effect of the Steady Velocity. 899-906B

Aluminum, Reduction (chemical)
Sn—C and Al—Sn—C Phase Diagrams and Thermodynamic Properties of Carbon in the Alloys: 1550-2300°C. 53-58B

Aluminum, Solubility
Hydrogen Probe Equipped With $SrCeO_3$-Based Proton Conductor and Ca/CaH_2 Reference Electrode. 789-794B

Aluminum, Steel making
The Reduction Mechanism of Chromite in the Presence of a Silica Flux. 987-995B

Aluminum, Surface properties
Four Wetting Phases in AlN/Al and AlN Composites/Al Systems, Models of Nonreactive, Reactive, and Composite Systems. 1391-1397B

Aluminum base alloys, Brazing
Microstructural Control in an Aluminum Core Alloy for Brazing Sheet Applications. 1935-1942A

Aluminum base alloys, Casting
Shape and Stability Computations of Electromagnetically Confined Liquid Metal Boundaries. 171-178B
Mechanisms of Porosity Formation During Solidification: a Theoretical Analysis. 349-364B
Numerical Simulation of Solidification of Molten Aluminum Alloys in Cylindrical Molds. 677-684B
Interfacial Phenomena in the Reactions of Al—B, Al—Ti—B, and Al—Zr—B Alloys With KF—AlF_3 and NaF—AlF_3 Melts. 947-953B
Interfacial Phenomena in the Reactions of Aluminum and Al—Ti Melts With KF—AlF_3 and NaF—AlF_3 Melts. 955-961B
Modeling of Solute Redistribution in the Mushy Zone During Solidification of Aluminum—Copper Alloys. 963-973A
Solubility and Thermodynamic Properties of Li_2O in LiF—CaF_2 Melts. 1031-1035B
The Effect of Sodium and Strontium Modification on Surface Tension and Volumetric Shrinkage of A356 Alloy and Their Influence on Porosity Formation. 1055-1063B
Heterogeneous Nucleation of Solidification of Silicon by Solid Aluminum in Hypoeutectic Al—Si Alloy. 1195-1204A
Electrical Conductivity and Microstructure of Aluminum Alloys. 2355-2358A
Extent of Depression in Eutectic Temperature at Two Levels of Silicon in Al—Si—Mg Alloys Processed at Different Cooling Rates. 2810-2812A

Aluminum base alloys, Composite materials
Tribological Characteristics of Aluminum—50 Vol.% Graphite Composite. 151-159A
Deformation-Induced Residual Stress Changes in SiC Whisker-Reinforced 6061 Aluminum Composites. 187-196A
Stress Distribution in Particulate-Reinforced Metal-Matrix Composites Subjected to External Load. 197-207A
The Effect of Superimposed Hydrostatic Pressure on Deformation and Fracture. II. Particulate-Reinforced 6061 Composites. (Conference Paper) 609-615A
Damping Behavior of 6061Al/Gr Metal Matrix Composites. 701-712A
The Mechanical Behavior of Directionally Solidified Al—Ni in Compression. 713-719A
Failure Mechanisms in SiC-Fiber Reinforced 6061 Aluminum Alloy Composites Under Monotonic and Cyclic Loading. 721-734A
Adiabatic Shear Band Formation in Al—SiC_w Composites. 895-900A
Strain-Rate Effects on High-Temperature Fracture Behavior of a 2124Al—SiC_w Composite. 1125-1131A
Particulate Fracture During Deformation of a Spray Formed Metal-Matrix Composite. 1575-1588A
Effect of Melt Cleanliness on the Properties of an Al—10 wt.% Si—10 vol.% SiC(p) Composite. 1631-1645A
The Reduced Pressure Test as a Measuring Tool in the Evaluation of Porosity/Hydrogen Content in Al—7 wt.% Si—10 vol.% SiC(p) Metal Matrix Composite. 1857-1868A
Influence of Thermally Induced Plasticity on the Bauschinger Effect of SiC/Al Composites. 1879-1882A
Effects of Heat Treatment and Reinforcement Size on Reinforcement Fracture During Tension Testing of a SiC_p Discontinuously Reinforced Aluminum Alloy. 2531-2543A
The Influence of Matrix Microstructure and TiC Reinforcement on the Cyclic Response and Fatigue Behavior of 2219 Aluminum. 2545-2557A
Reactions During Infiltration of Graphite Fibers by Molten Al—Ti Alloy. 2577-2583A
The Influence of Matrix Microstructure and Particle Reinforcement on the Creep Behavior of 2219 Aluminum. 2731-2741A

Aluminum base alloys, Corrosion
Effects of Hydrogen on Mechanical Properties and Fracture Mechanism of 8090 Al—Li alloy. 1355-1361B
Stress-Corrosion Cracking in Equiaxed 7075 Aluminum Under Tension and Torsion Loading. 2569-2575A

Aluminum base alloys, Diffusion
Atomic Mechanisms of Diffusional Nucleation and Growth and Comparisons With Their Counterparts in Shear Transformations. 241-276A
An Analytical Model for Solute Redistribution During Solidification of Planar, Columnar, or Equiaxed Morphology. 2107-2118A

Aluminum base alloys, Heat treatment
Homogenization of Near-Gamma Titanium Aluminides: Analysis of Kinetics and Process Scaleup Feasibility. 1295-1306B
Composition and Stability of Ω Phase in an Al—Cu—Mg—Ag Alloy. 1461-1470A

Misfit Accommodation in a Quenched and Aged Al—Cu Alloy With Silicon Particles. 1723-1731A
Melting of Secondary-Phase Particles in Al—Mg—Si Alloys. 2629-2641A

Aluminum base alloys, Mechanical properties
Microstructure and Mechanical Behavior of Al—Li—Cu—Mg Alloy 8090 Microalloyed With Vanadium and Beryllium. 95-104A
Boron and Off-Stoichiometry Effects on the Strength and Ductility of AlRu. 227-230A
Toughening Mechanisms in Titanium Aluminides. (Conference Paper) 569-583A
The Effects of Superimposed Hydrostatic Pressure on Deformation and Fracture. I. Monolithic 6061 Aluminum. (Conference Paper) 601-608A
Mechanical and Oxidation Properties of AlRu-Based High-Temperature Alloys. 759-763A
Mechanical Behavior of Double-Aged AA8090. 833-841A
Microstructure-Property Relationships in Low-Density Al—Li—Mg Alloys. 853-863A
Microstructure and Mechanical Properties of Dispersion-Strengthened High-Temperature Al—8.5Fe—1.2V—1.7Si Alloys Produced by Atomized Melt Dispersion Process. 865-873A
Springback in Simple Axisymmetric Stampings. 925-934A
Cooperative Grain-Boundary Sliding in Mechanically Alloyed IN 9021 I Alloy During High Strain Rate Superplasticity. 1208-1212A
Fatigue Crack Growth Through the Lamellar Microstructure of an Alloy Based on TiAl at 25 and 800°C. 1555-1574A
Characterization of Room-Temperature Damping in Aluminum—Indium Alloys. 1611-1619A
Small Fatigue Crack Behavior in 7075-T651 Aluminum as Monitored With Rayleigh Wave Reflection. 1773-1783A
Intrinsic Fatigue Crack Growth Rates for Al—Li—Cu—Mg Alloys in Vacuum. 1807-1817A
Creep Behavior of an Al-2.0 Wt.%.Li Alloy in the Temperature Range 300-500°C. 2001-2007A
Cyclic Deformation and Fracture Behavior of Aluminum Alloy 6061 Under the Action of Positive Mean Stresses. 2083-2093A
The Effects of Prolonged Thermal Exposure on the Fracture and Fatigue Behavior of Aluminum—Lithium Alloy 8090. 2233-2245A
Improved Model to Predict Properties of Aluminum Alloy Products After Continuous Cooling. 2417-2427A
A Study of the Improvement of Superplasticity of 7075 Alloy. 2596-2598A
Environmental Fatigue of an Al—Li—Cu Alloy. II. Microscopic Hydrogen Cracking Processes. 2751-2762A

Aluminum base alloys, Metal working
Cavity Distribution Pattern in a Superplastically Deformed Aluminum Alloy. 417-424A
The Absence of Relative Grain Translation During Superplastic Deformation of an Al—Li—Mg—Cu—Zr Alloy. 1085-1093A
A Better Sheet Formability Test. 1143-1151A
Calculations of Forming Limit Diagrams for Changing Strain Paths. 2497-2501A
Effect of Changing Strain Paths on Forming Limit Diagrams of Aluminum 2008-T4. 2503-2512A

Aluminum base alloys, Microstructure
Interdendritic Eutectic Solidification of an AlSi-7.0 Alloy Under Microgravity. 208-212B
Grain Growth of a Superplastic 7475 Aluminum Alloy. 493-495A

Aluminum base alloys, Oxidation
Compositional Changes in Aluminum—Lithium-Base Alloys Caused by Oxidation. 2279-2288A

Aluminum base alloys, Phases (state of matter)
Sn—C and Al—Sn—C Phase Diagrams and Thermodynamic Properties of Carbon in the Alloys: 1550-2300°C. 53-58B
Study of the Mechanism of Grain Refinement of Aluminum After Additions of Titanium- and Boron-Containing Master Alloys. 481-491A
The Solidification Behavior of 8090 Al—Li Alloy. 857-865B

Aluminum base alloys, Physical properties
Measurement of Solid Solubility of Germanium in Aluminum. 277-282A

Aluminum base alloys, Rolling
A Study of Subsurface Crack Initiation Produced by Rolling Contact Fatigue. 351-359A

Aluminum base alloys, Structural hardening
Effects of Silicon Addition on the First Stage of Precipitation in the Al—1.52% Cu—0.75% Mg Alloy. 2181-2187A
Temperature Dependence of Strain Hardening in a Dispersion-Strengthened Al—Fe—V—Si Alloy. 2589-2593A
Effect of Stretching on the Precipitation Kinetics of an Al—2.0Li—2.8Cu—0.5Mg(—0.13Zr) Alloy. 2613-2621A

Aluminum base alloys, Thermal properties
The Glass—Liquid and Solid—Jelly Transition Temperatures. 309-315B

Aluminum base alloys, Welding
Correction to "Beam Focusing Characteristics and Alloying Element Effects on High-Intensity Electron Beam Welding". 81-90B
Keyhole Formation. 875-880B
The Effects of Process Variables on Pulsed Nd:YAG Laser Spot Welds. I. AISI 409 Stainless Steel. 1065-1076B
New Explosive Welding Technique to Weld Aluminum Alloy and Stainless Steel Plates Using a Stainless Steel Intermediate Plate. 2289-2297A

Aluminum compounds
See also Aluminum oxide

Aluminum compounds, Composite materials
A Structural Study of Oxidation in a Zirconia-Toughened Alumina Fiber-Reinforced Fe_3Al Composite. 435-443A
Toughening Mechanisms in Intermetallics. (Conference Paper) 561-567A
The Mechanical Behavior of Directionally Solidified Al—Ni in Compression. 713-719A
Microstructural Toughening Mechanisms in γ-TiAl · 20% TiCb as Determined by FRASTA. 883-894A
Interfacial Shear Strength of Cast and Directionally Solidified NiAl—Sapphire Fiber Composites. 2119-2125A
Creep Regimes for Directionally Solidified Al—Al_3Ni Eutectic Composite. 2721-2730A

Aluminum compounds, Extrusion
The Role of Microstructure on Strength and Ductility of Hot-Extruded Mechanically Alloyed NiAl. 1993-2000A

Aluminum compounds, Mechanical properties
Boron and Off-Stoichiometry Effects on the Strength and Ductility of AlRu. 227-230A
High-Temperature Creep of the Intermetallic Alloy Ni_3Al. 335-341A
An Analytical Description for the Deformation Response of Ni_3Al Alloys in the Anomalous Regime. 397-401A
Microhardness and Compressive Mechanical Behavior of $L1_2$ Titanium Trialuminides. 935-946A
Surface Preparation and Bend Ductility of NiAl. 2593-2596A

Aluminum compounds, Metallography
Fracture Morphology of NiAl Single Crystals Tested in Tension. 1363-1371B

Aluminum killed steels, Mechanical properties
Springback in Simple Axisymmetric Stampings. 925-934A

Aluminum oxide, Composite materials
A Structural Study of Oxidation in a Zirconia-Toughened Alumina Fiber-Reinforced Fe_3Al Composite. 435-443A
The Effect of Superimposed Hydrostatic Pressure on Deformation and Fracture. II. Particulate-Reinforced 6061 Composites. (Conference Paper) 609-615A
Residual Strain Gradient Determination in Metal Matrix Composites by Synchrotron X-Ray Energy Dispersive Diffraction. 1117-1124A

Ammonia pressure leaching
Use of X-Ray Diffraction in a Study of Ammonia Leaching of Multimetal Sulfides. 937-945B

Amorphous structure
Metastable Crystalline and Amorphous Structures Formed in the Cu—W System by Vapor Deposition. 1027-1037A

Amorphous structure, Cooling effects
Structure and Decomposition of A13-Type Phase in Rapidly Solidified High-Carbon Cr—Si Iron Alloy. 751-756A
Kinetics of Growth of the Ti—Co Intermetallic Compounds During Rapid Solidification. 1869-1875A

Analyzing
See Failure analysis
Mathematical analysis
Stress analysis

Andrade method
See Crystal growth

Angles (geometry)
See Contact angle

Anisotropy
See also Elastic anisotropy
Spontaneous Evolution of Microstructure in Materials. 1689-1721A

Anisotropy, Composition effects
Nonuniform Recrystallization in a Mechanically Alloyed Nickel-Base Superalloy. 1049-1055A

Annealing
See also Graphitization
Homogenizing
Solution annealing
Spheroidizing
The Effect of Annealing on the Microstructure and Mechanical Properties of Cu—X Microcomposites. (Conference Paper) 27-34A
Formation of $L1_2$-Structured Ni_3Si. 283-292A
Grain Growth of a Superplastic 7475 Aluminum Alloy. 493-495A
Crystallographic Texture in Mechanically Alloyed Oxide Dispersion-Strengthened MA956 and MA957 Steels. 773-779A
The Effect of Wire History on the Coarsened Substructure and Secondary Recrystallization of Doped Tungsten. 843-851A
Simulated Hot Working, Cold Working, and Annealing of Aluminum-Containing Steels. 1589-1596A
Morphological Effect on the Mechanical Behavior of a Two-Phase Ti_3Al—Nb Alloy. 1785-1793A
Microstructural Changes in As-Cast M2 Grade High Speed Steel During Hot Forging. 2171-2180A
Melting of Secondary-Phase Particles in Al—Mg—Si Alloys. 2629-2641A
Effect of Activity Differences on Hydrogen Migration in Dissimilar Titanium Alloy Welds. 2763-2771A

Anodic dissolution, Environmental effects
Hydrogen-Facilitated Corrosion and Stress Corrosion Cracking of Austenitic Stainless Steel of Type 310. 959-962A

Antifriction alloys
See Tin base alloys

Antimony, Recovering
Thermodynamic Activity of Antimony at Dilute Solutions in Carbon-Saturated Liquid Iron. 963-973B

Arc welding
See Submerged arc welding

Arc welds
See Welded joints

Argon, Environment
Penetration and Chemical Reactions in Carbon Cathodes During Aluminum Electrolysis. I. Laboratory Experiments. 75-89B

Argon arc welding
See Gas tungsten arc welding

Arrhenius activation energy
See Activation energy

Artificial aging
See Aging (artificial)

Astroceram
See Ceramics

Atmospheres
See Controlled atmospheres

Atmospheric pollution
See Air pollution

Atomic diffusion
See Diffusion

Atomic properties
See Atomic structure
Electronic structure

Atomic structure
Atomic Mechanisms of Diffusional Nucleation and Growth and Comparisons With Their Counterparts in Shear Transformations. 241-276A
^{197}Au Mossbauer Study of Copper Refinery Anode Slimes. 457-462B
Kinetics of the Dissolution of Pure Silver and Silver—Gold Alloys in Nitric Acid Solution. 827-837B
The Role of Microstructure on Strength and Ductility of Hot-Extruded Mechanically Alloyed NiAl. 1993-2000A

Atomic structure, Alloying effects
Effect of Ti/Al Ratio and Chromium, Niobium, and Hafnium Additions on Material Factors and Mechanical Properties in TiAl. 141-150A
Effects of Silicon Addition on the First Stage of Precipitation in the Al—1.52% Cu—0.75% Mg Alloy. 2181-2187A

Atomic structure, Cooling effects
Structure and Decomposition of A13-Type Phase in Rapidly Solidified High-Carbon Cr—Si Iron Alloy. 751-756A
Phase Selection in Undercooled Ti_3Sn Melts. 1481-1496A

Atomic structure, Deformation effects
Effect of Deformation Parameters on the No-Recrystallization Temperature in Niobium-Bearing Steels. 2151-2159A

Atomic structure, Heating effects
Orientation Relationships Between M_2C Carbide and the Austenite Matrix in an Fe—Mn—Al—Mo—C Alloy. 1057-1065A

Atomic structure, Radiation effects
Early Stages of Decomposition in Iron—Carbon and Iron—Nitrogen Martensites: Diffraction Analysis Using Synchrotron Radiation. 1965-1973A

Atomization
See Atomizing

Atomizing
Deformation-Processed Wire Prepared From Gas-Atomized Cu—Nb Alloy Powders. (Conference Paper) 21-26A
Strength and Electrical Conductivity of Deformation-Processed Cu—15 Vol% Fe Alloys Produced by Powder Metallurgy Techniques. (Conference Paper) 35-42A
Damping Behavior of 6061Al/Gr Metal Matrix Composites. 701-712A

Atomizing, Cooling effects
Spray Deposition of a Sn—40 wt.% Pb Alloy With Uniform Droplets. 1187-1193A

Attenuation
See Damping

Auger electron spectroscopy
Auger Electron Spectroscopy Study of Grain Boundary Segregation in Alloy K-500. I. Behavior in As-Processed State. 1897-1907A
Auger Electron Spectroscopy Study of Grain Boundary Segregation in Alloy K-500. II. Behavior in Slow Strain Rate Tensile Test. 1909-1917A

Austenite
The Influence of Martensite Shape, Concentration, and Phase Transformation Strain on the Deformation Behavior of Stable Dual-Phase Steels. 301-314A

Austenite, Alloying effects
Phase Chemistry and Precipitation Reactions in Maraging Steels. II. Cobalt-Free T-300 Steel. 1233-1239B
Phase Chemistry and Precipitation Reactions in Maraging Steels. IV. Discussion and Conclusions. 1251-1256B
The Effect of Manganese on the Activities of Iron, Nickel, and Chromium in an Fe—Ni—Cr Base Alloy. 2379-2382A

Austenite, Heating effects
The Microstructure of Discontinuously Precipitated Lamellae in an Austenitic Fe—42.4 wt.% Ni—4.15 wt.% Al—0.45 wt.% C Alloy. 1039-1047A
Orientation Relationships Between M_2C Carbide and the Austenite Matrix in an Fe—Mn—Al—Mo—C Alloy. 1057-1065A
Phase Chemistry and Precipitation Reactions in Maraging Steels. I. Introduction and Study of Cobalt-Containing C-300 Steel. 1221-1239B
The Mechanical Stability of Austenite and Cryogenic Toughness of Ferritic Fe—Mn—Al Alloys. 1333-1343B
Transmission Electron Microscopy Examination of Hardening and Toughening Phenomena in Aermet 100. 1943-1955A
Phase Transformations in an Fe—7.8Al—29.5Mn—1.5Si—1.05C Alloy. 1957-1963A
Elastic Limit and Microplastic Response of Hardened Steels. 2263-2277A
Precipitation Hardening in 350 Grade Maraging Steel. 2429-2442A
Crystallographic Orientation Relationships Among η-Ni_3Ti Precipitate, Reverted Austenite, and Martensitic Matrix in Fe—10Cr—10Ni—2W Maraging Alloy. 2643-2652A
The Isothermal Diagram of Transformation of the Residual Austenite by Tempering. 2805-2810A

Austenite, Radiation effects
Microstructural Characterization and *In Situ* Transmission Electron Microscopy Analysis of Laser-Processed and Thermally Treated Fe—Cr—W—C Clad Coatings. 1621-1629A

Austenite, Temperature effects
A Thermodynamic Evaluation of the Fe—Mn—N System. 629-645A
Incomplete Reaction Phenomenon in High Strength Bainitic Steels. 2145-2150A

Austenitic stainless steels, Casting
Real-Time Simulation of Heat Transfer in Continuous Casting. 685-693B

Austenitic stainless steels, Corrosion
Hydrogen-Facilitated Corrosion and Stress Corrosion Cracking of Austenitic Stainless Steel of Type 310. 959-962A

Austenitic stainless steels, Mechanical properties
An Assessment of Cold Work Effects on Strain-Controlled Low-Cycle Fatigue Behavior of Type 304 Stainless Steel. 913-924A
A New Orientation Relationship Between M_6C Carbide and the Austenite Matrix in an Fe—Mn—Al—Mo—C Alloy. 1671-1673A
Fatigue and Creep—Fatigue Damage of Austenitic Stainless Steels Under Multiaxial Loading. 2247-2261A
Temperature-Induced Transition in Ductile Fracture Appearance of a Nitrogen-Strengthened Austenitic Stainless Steel. 2521-2529A

Austenitic stainless steels, Phases (state of matter)
Phase Transformations in an Fe—7.8Al—29.5Mn—1.5Si—1.05C Alloy. 1957-1963A

Austenitic stainless steels, Powder technology
Hot Isostatic Pressing (HIP) of Powder Mixtures and Composites: Packing, Densification, and Microstructural Effects. 1345-1354B

Austenitic stainless steels, Welding
Calculation of Weld Metal Composition Change in High-Power Conduction Mode Carbon Dioxide Laser-Welded Stainless Steels. 145-155B
Correction to "Computational Modeling of Stationary Gas-Tungsten-Arc Weld Pools and Comparison to Stainless Steel 304 Experimental Results". 399B
Diffusion Bonding of Silicon Nitride to Austenitic Stainless Steel Without Interlayers. 1835-1843A
New Explosive Welding Technique to Weld Aluminum Alloy and Stainless Steel Plates Using a Stainless Steel Intermediate Plate. 2289-2297A

Austenitizing
The Effect of the Precipitation of Coherent and Incoherent Precipitates on the Ductility and Toughness of High-Strength Steel. 127-139A
The Microstructural Evolution, Crystallography, and Thermal Processing of Ultrahigh Carbon Fe—1.85% C Melt-Spun Ribbon. 809-818A
The Composition of the Solid Solution, Structure, and Contact Fatigue of the Case-Hardened Layer. 1163-1168A
Elastic Limit and Microplastic Response of Hardened Steels. 2263-2277A

Auto oxidation
See Oxidation

Autodiffusion
See Diffusion

Autogenous smelting
See Flash smelting

Automatic control
See Computer control

Automobile components
See Automotive components

Automotive bodies, Metal working
Effect of Changing Strain Paths on Forming Limit Diagrams of Aluminum 2008-T4. 2503-2512A

Automotive components
See also Automotive bodies

Automotive components, Casting
Elaboration of Metal Matrix Composites From Thixotropic Alloy Slurries Using a New Magnetohydrodynamic Caster. 493-510B

Automotive components, Materials selection
Microstructural Control in an Aluminum Core Alloy for Brazing Sheet Applications. 1935-1942A
Synthesis of TiC Particulates and Their Segregation During Solidification in In Situ Processed Al—TiC Composites. 2358-2362A
Residual Stresses and Their Effects on Deformation in Particle-Reinforced Metal-Matrix Composites. 2487-2496A
Effects of Heat Treatment and Reinforcement Size on Reinforcement Fracture During Tension Testing of a SiC_p Discontinuously Reinforced Aluminum Alloy. 2531-2543A

Axial stress
Stress Distribution in Particulate-Reinforced Metal-Matrix Composites Subjected to External Load. 197-207A
Periodic Oxide Cracking on Fe2.25Cr1Mo Produced by High-Temperature Fatigue Tests With a Compression Hold. 327-333A
The Absence of Relative Grain Translation During Superplastic Deformation of an Al—Li—Mg—Cu—Zr Alloy. 1085-1093A
Numerical Analysis of the Hot Tension Test. 2039-2047A
Theoretical Calculation of Anisotropic Creep and Stress—Strain Behavior for a Class of Metal-Matrix Composites. 2049-2059A
Fatigue and Creep—Fatigue Damage of Austenitic Stainless Steels Under Multiaxial Loading. 2247-2261A

Calculations of Forming Limit Diagrams for Changing Strain Paths. 2497-2501A
Effect of Changing Strain Paths on Forming Limit Diagrams of Aluminum 2008-T4. 2503-2512A
Strain Path Change Effects in the Local Necking of Aluminum Sheet and in the Tension of Internally Pressurized Tubes. 2691-2699A

Backscattering
The Mineralogical Characterization of Tellurium in Copper Anodes. 997-1007B
Determination of the Total Texture Function From Individual Orientation Measurements by Electron Backscattering Pattern. 2299-2311A

Bacterial leaching
Electrochemistry of *Thiobacillus ferrooxidans* Interactions With Pyrite. 717-727B

Bainite, Temperature effects
Incomplete Reaction Phenomenon in High Strength Bainitic Steels. 2145-2150A

Ball milling
Milling Dynamics. I. Attritor Dynamics: Results of a Cinematographic Study. 175-185A
Combustion Reaction of $Ni_{40}Ti_{60}$ During Mechanical Alloying in Oxygen Atmosphere. 225-227A
The Kinetics of Composite Particle Formation During Mechanical Alloying. 647-657A
Modeling of Particle Size Evolution During Mechanical Milling. 2465-2471A

Ballistic impact tests
Adiabatic Shear Band Formation in Al—SiC_w Composites. 895-900A
Microstructural Study of Adiabatic Shear Band Formed by Ballistic Impact in an HY-100 Steel. 2217-2224A

Barium, Oxidation
Determination of Standard Gibbs Energies of Formation of MgO, SrO, and BaO. 487-492B

Bars, Heat treatment
Mathematical Model of Phase Transformations and Elasto—Plastic Stress in the Water Spray Quenching of Steel Bars. 795-808A

Bars, Structural hardening
Auger Electron Spectroscopy Study of Grain Boundary Segregation in Alloy K-500. I. Behavior in As-Processed State. 1897-1907A

Basic oxygen processes
See Oxygen steel making

Basic oxygen steel making
See Oxygen steel making

Batch type furnaces
See Oxygen blown converters

Batteries (electric)
See Electric batteries

Bearing alloys
See Bearing steels

Bearing steels, Rolling
A Study of Subsurface Crack Initiation Produced by Rolling Contact Fatigue. 351-359A

Bearings, Fabrication
Synthesis of Surface Pores in a Bronze—Graphite Composite Using Electron Beam Surface Melting. 230-233A

Bend ductility, Temperature effects
Surface Preparation and Bend Ductility of NiAl. 2593-2596A

Bend properties
See Bend ductility
Bend strength

Bend strength
Strength and Toughness of a Nb/Nb_5Si_3 Composite. 501-504A

Bend strength, Alloying effects
Effect of Ti/Al Ratio and Chromium, Niobium, and Hafnium Additions on Material Factors and Mechanical Properties in TiAl. 141-150A

Bendability
See Formability

Bending strength
See Bend strength

Beneficiation
A Mathematical Model for Heap Leaching of One or More Solid Reactants From Porous Ore Pellets. 1087-1102B

Beryllium, Alloying elements
Microstructure and Mechanical Behavior of Al—Li—Cu—Mg Alloy 8090 Microalloyed With Vanadium and Beryllium. 95-104A

Beryllium compounds, Phase transformations
Transformation Path Dependence of the Bain Strain Relaxation During Decomposition of a Hypereutectoid CuBe Alloy. 2605-2611A

Biaxial stress
See Axial stress

Bicrystals, Welding
Microstructural Formation in Longitudinal Bicrystal Welds. 1433-1446B

Billet casting
Elaboration of Metal Matrix Composites From Thixotropic Alloy Slurries Using a New Magnetohydrodynamic Caster. 493-510B

Billet casting, Quality control
Empowerment With Knowledge—Toward the Intelligent Mold for the Continuous Casting of Steel Billets. 917-935B

Billets
See also Extrusion billets

Billets, Heat treatment
The Effect of Annealing on the Microstructure and Mechanical Properties of Cu—X Microcomposites. (Conference Paper) 27-34A

Binary systems, Phases (state of matter)
Liquidus Temperatures in the Ti—Al System. 61-66A
Thermodynamics of Iron—Aluminum Alloys at 1573K. 481-486B
Metastable Crystalline and Amorphous Structures Formed in the Cu—W System by Vapor Deposition. 1027-1037A
Thermochemistry of Binary and Ternary Noble Metal Alloys: the Systems Cu—Ce, Ag—Ce, Au—Ce, Cu—Ag—Au, and Ce—Ag—Au. 1827-1834A
A Thermodynamic Evaluation of the Cr—Mn and Fe—Cr—Mn Systems. 1919-1933A

Binary systems, Physical properties
Optical Properties and Spectral Emissivities at 623.8 nm in the Titanium—Aluminum System. 67-72A

Bioleaching
See Bacterial leaching

Bismuth, Refining
Oxygen Deleading of Lead—Bismuth Alloys. 839-846B

Bismuth compounds, Impurities
Determination of Standard Gibbs Energy of Formation of Ca_3N_2. 907-909B

Blankets (atmospheres)
See Controlled atmospheres

Blast furnace chemistry
Reduction Rate of SiO_2 in Slag by Carbon-Saturated Iron. 113-120B
Thermodynamics of Oxygen and Nitrogen in Liquid Iron Equilibrated With CaO—SiO_2—Al_2O_3 Slags. 121-130B
Thermodynamics of Nitrogen in BaO—TiO_x Melts. 131-138B
Gaseous Reduction of Laterite Ores. 271-295B

Blast furnace practice
Motions of Alloying Additions During Furnace Tapping in Steelmaking Processing Operations. 639-648B

Blast furnace slags
Quantitative Method for Silica Flux Evaluation. 63-73B
Thermodynamics of Oxygen and Nitrogen in Liquid Iron Equilibrated With CaO—SiO_2—Al_2O_3 Slags. 121-130B
The Solubility of Copper in Lime-Saturated and Calcium Ferrite-Saturated Liquid Iron Oxide. 265-269B
Thermodynamics of Sulfur in BaO—CaO—CO_2 System. 325-331B
Thermodynamic Properties of the BaO—MnO Flux System. 333-337B
Surface and Interfacial Tension of the Ni—Fe—S, Ni—Cu—S, and Fayalite Slag Systems. 657-668B

Blast furnace slags, Phases (state of matter)
Critical Evaluation and Optimization of the Thermodynamic Properties and Phase Diagrams of the CaO—Al_2O_3, Al_2O_3—SiO_2, CaO—Al_2O_3—SiO_2 Systems. 807-816B
Calculation of Sulfide Capacities of Multicomponent Slags. 817-825B

Blast furnace slags, Reactions (chemical)
Reduction Rate of SiO_2 in Slag by Carbon-Saturated Iron. 113-120B
Thermodynamics of Nitrogen in BaO—TiO_x Melts. 131-138B

Blast furnace slags, Reduction (chemical)
A Mössbauer Study of the Behavior of Iron Cations in Iron Oxide-Containing Melts at 1400°C. 101-111B

Blending
See Powder blending

Bohr model
See Atomic structure

Boilers, Design
Microstructural Examination of Fatigue Crack Tip in High Strength Steel. 2209-2216A

Boiling points, Temperature effects
The Glass—Liquid and Solid—Jelly Transition Temperatures. 309-315B

Bomb reduction
See Reduction (chemical)

Bombs (pressure vessels)
See Pressure vessels

Bonding
See Roll bonding

Borides, Synthesis
An Investigation of the Effect of Porosity and Diluents on Micropyretic Synthesis. 617-628A
Standard Enthalpies of Formation of NbB_2, MoB, and ReB_2 by High-Temperature Direct Synthesis Calorimetry. 947-950A

Boron, Alloying elements
Boron and Off-Stoichiometry Effects on the Strength and Ductility of AlRu. 227-230A

Boron compounds
See Borides

BOS process
See Oxygen steel making

Boundaries
See Grain boundaries
Phase boundary

Brasses, Composite materials
Layer Thickness Effect on Ductile Tensile Fracture of Ultrahigh Carbon Steel—Brass Laminates. 1647-1653A

Brasses, Metal working
A Better Sheet Formability Test. 1143-1151A

Brazed joints, Corrosion
Microstructural Control in an Aluminum Core Alloy for Brazing Sheet Applications. 1935-1942A

Bridgman method
See Crystal growth

Brittle fracture, Environmental effects
Stress Corrosion Cracking of Ag—20Au in $HClO_4$, $AgClO_4$, and KCl Solutions by Surface Mobility. 425-433A
Environmental Fatigue of an Al—Li—Cu Alloy. II. Microscopic Hydrogen Cracking Processes. 2751-2762A

Brittle fracture, Heating effects
The Effect of the Precipitation of Coherent and Incoherent Precipitates on the Ductility and Toughness of High-Strength Steel. 127-139A

Brittle fracture, Microstructural effects
Micromechanisms of Brittle Fracture. (Conference Paper) 523-534A
A Dislocation Shielding Prediction of the Toughness Transition During Cleavage of Semibrittle Crystals. (Conference Paper) 535-543A
The Role of Mobile Dislocations in the Nucleation of Brittle Fracture. (Conference Paper) 545-552A

Brittleness, Alloying effects
Metal-Induced Embrittlement of Low-Carbon Steel by Indium in Association With Tellurium. 504-508A

Brittleness, Composition effects
Design and Development of Hot Corrosion-Resistant Nickel-Base Single Crystal Superalloys by the d-Electrons Alloy Design Theory. I. Characterization of the Phase Stability. 2443-2450A

Brittleness, Deformation effects
General Aspects of the Thermomechanical Treatment of Two-Phase Intermetallic TiAl Compounds. 1795-1806A

Brittleness, Heating effects
Selective Laser Sintering of Intermetallics. 757-759A
The Microstructural Evolution, Crystallography, and Thermal Processing of Ultrahigh Carbon Fe—1.85% C Melt-Spun Ribbon. 809-818A

Brittleness, High temperature effects
Mechanical and Oxidation Properties of AlRu-Based High-Temperature Alloys. 759-763A

Brittleness, Microstructural effects
A Dislocation Shielding Model for the Fracture of Semibrittle Polycrystals. 343-350A
Microstructure-Property Relationships in Low-Density Al—Li—Mg Alloys. 853-863A

Bronzes, Composite materials
Synthesis of Surface Pores in a Bronze—Graphite Composite Using Electron Beam Surface Melting. 230-233A

Buckling, Orientation effects
The Mechanical Behavior of Directionally Solidified Al—Ni in Compression. 713-719A

Burdening
See Blast furnace practice

Burn up
See Fuel consumption

Burning
See Combustion

Burnout
See Fuel consumption

Cakes (metal)
See Sinter (material)

Calandria
See Heat exchangers

Calcium, Alloying elements
Interfacial Phenomena in the Reactions of Aluminum and Al—Ti Melts With KF—AlF_3 and NaF—AlF_3 Melts. 955-961B

Calcium compounds, Impurities
Determination of Standard Gibbs Energy of Formation of Ca_3N_2. 907-909B

Calculating
See Computer programs
Mathematical analysis
Numerical analysis

Calculation
See Computer programs
Mathematical analysis
Numerical analysis

Calorimetry
Calorimetrically Measured Enthalpies for the Reaction of $H_2(D_2)$ (g) With Titanium and Ti—Ni Alloys at 323K. 867-873B
Standard Enthalpies of Formation of NbB_2, MoB, and ReB_2 by High-Temperature Direct Synthesis Calorimetry. 947-950A
Heterogeneous Nucleation of Solidification of Silicon by Solid Aluminum in Hypoeutectic Al—Si Alloy. 1195-1204A
Calorimetrically Measured Enthalpies for the Reaction of H_2 (g) With Zirconium and Zirconium Alloys. 1471-1479A
Calorimetrically Measured Enthalpies for the Reaction of Hafnium With $H(D)_2$ (g). 2623-2627A

Carbides
See also Silicon carbide
A Thermodynamic Evaluation of the Fe—Cr—Mn—C System. 1017-1025A

Carbides, Composite materials
Preliminary Evaluation of Tensile and Stress—Rupture Behavior of Tungsten + 24 at.% Rhenium + 0.4 at.% HfC Wire. 209-214A

Carbides, Synthesis
An Investigation of the Effect of Porosity and Diluents on Micropyretic Synthesis. 617-628A

Carbon
See also Graphite

Carbon, Alloying elements
Environmentally Assisted Cracking of Two-Phase Iron—Manganese—Aluminum Alloys in NaCl Solution. 459-464A

Carbon, Quaternary systems
A Thermodynamic Evaluation of the Fe—Cr—Mn—C System. 1017-1025A

Carbon, Ternary systems
Thermodynamics of Si—C—O System. 1212-1214A

Carbon compounds
See Carbides

Carbon in pulp process
The Reversibility of Adsorption of Gold Cyanide on Activated Carbon. 433-440B

Carbon manganese steels, Mechanical properties
Further Investigation of Critical Events in Cleavage Fracture of C—Mn Base and Weld Steel. 659-667A
Critical Assessment of the Local Cleavage Stress σ_f^* in Notch Specimens of C—Mn Steel. 1381-1389B

Carbon manganese steels, Structural hardening
A Transmission Electron Microscopy Study of Copper Precipitation in the Cementite Phase of Hypereutectoid Alloy Steels. 781-793A

Carbon steels
See also Carbon manganese steels
High carbon steels
Killed steels
Low carbon steels
Medium carbon steels

Carbon steels, Mechanical properties
A Dislocation Shielding Model for the Fracture of Semibrittle Polycrystals. 343-350A
Micromechanisms of Brittle Fracture. (Conference Paper) 523-534A

Carbonizing (combustion)
See Coking

Carbothermic reactions
The Reduction Mechanism of Chromite in the Presence of a Silica Flux. 987-995B

Carbothermic reactions, Temperature effects
Sn—C and Al—Sn—C Phase Diagrams and Thermodynamic Properties of Carbon in the Alloys: 1550-2300°C. 53-58B

Carburization
See Carburizing

Carburizing
Automatic Control of the Carbon Potential of Furnace Atmospheres Without Adding Enriched Gas. 881-888B
Decreased Gas Consumption of a Fluidized Bed Furnace. 889-897B
The Composition of the Solid Solution, Structure, and Contact Fatigue of the Case-Hardened Layer. 1163-1168A
The Isothermal Diagram of Transformation of the Residual Austenite by Tempering. 2805-2810A

Carrier mobility
See Electron mobility

Case carburizing
See Carburizing

Case hardening
See Carburizing

Case hardness
See Surface hardness

Cast iron
See also Gray iron
White iron

Cast iron, Physical properties
The Measurement of the Surface Tension of Molten Fe—3.52% C—2.02% Si(—Al,—Ti,—N) Alloys by the Maximum Bubble Pressure Method. 200-203B

Castability, Alloying effects
Design and Development of Hot Corrosion-Resistant Nickel-Base Single-Crystal Superalloys by the d-Electrons Alloy Design Theory. II. Effects of Refractory Metals Titanium, Tantalum, and Niobium on Microstructures and Properties. 2451-2464A

Casting
See also Billet casting
Centrifugal casting
Continuous casting
Ingot casting
Melt spinning
Permanent mold casting
Pressure casting
Rheocasting
Sand casting
Slab casting
Vacuum casting
The Nature and Influence of Convection on the Directional Dendritic Solidification of a Metal Alloy Analog, NH_4Cl, and H_2O. 669-675B

Modeling of Solute Redistribution in the Mushy Zone During Solidification of Aluminum—Copper Alloys. 963-973A
Determination of Interfacial Heat Transfer Coefficients in Casting and Quenching Using a Solution Technique for Inverse Problems Based on the Boundary Element Method. 1077-1086B

Casting defects
Empowerment With Knowledge—Toward the Intelligent Mold for the Continuous Casting of Steel Billets. 917-935B
The Effect of Sodium and Strontium Modification on Surface Tension and Volumetric Shrinkage of A356 Alloy and Their Influence on Porosity Formation. 1055-1063B

Casting defects, Cooling effects
Numerical Simulation of Solidification of Molten Aluminum Alloys in Cylindrical Molds. 677-684B

Casting defects, Environmental effects
The Reduced Pressure Test as a Measuring Tool in the Evaluation of Porosity/Hydrogen Content in Al—7 wt.% Si—10 vol.% SiC(p) Metal Matrix Composite. 1857-1868A

Castings, Electrical properties
Electrical Conductivity and Microstructure of Aluminum Alloys. 2355-2358A

Castings, Mechanical properties
Microstructure-Property Relationships in Low-Density Al—Li—Mg Alloys. 853-863A

Castings, Microstructure
Calculation of Dendrite Settling Velocities Using a Porous Envelope. 749-753B
Interfacial Phenomena in the Reactions of Aluminum and Al—Ti Melts With KF—AlF_3 and NaF—AlF_3 Melts. 955-961B
As-Cast Carbides in High-Speed Steels. 1265-1272B
A Multiphase Solute Diffusion Model for Dendritic Alloy Solidification. 2787-2802A

Castings, Oxidation
Service Failure of Hot-Stage Turbine Blades: the Role and Mechanisms of Oxidation Ratcheting. 2313-2319A

Catalytic converters
See Automotive components

Cavitation, Deformation effects
An Investigation of Superplasticity in a Thermomechanically Processed U—2Mo ($\alpha + \delta$) Alloy. 369-377A
Cavity Distribution Pattern in a Superplastically Deformed Aluminum Alloy. 417-424A

Cells
See Electrolytic cells

Cementation
Recovery of Copper From α-Etchant Solution by Electrowinning and Cementation. 192-197B

Cementite
A Transmission Electron Microscopy Study of Copper Precipitation in the Cementite Phase of Hypereutectoid Alloy Steels. 781-793A

Centrifugal casting
Experimental Investigation of the Phenomenon of Centrifuging of Liquids. 463-473B

Centrifuging
Experimental Investigation of the Phenomenon of Centrifuging of Liquids. 463-473B

Ceramic mold casting
See Investment casting

Ceramics
See also Aluminum oxide
Silicon carbide
Titanium carbide

Ceramics, Composite materials
Toughening Mechanisms in Intermetallics. (Conference Paper) 561-567A
Evaluation of the Wettability of Liquid Aluminum With Ceramic Particulates (SiC, TiC, Al_2O_3) by Means of Pressure Infiltration. 1423-1432B

Cerium, Ternary systems
Thermochemistry of Binary and Ternary Noble Metal Alloys: the Systems Cu—Ce, Ag—Ce, Au—Ce, Cu—Ag—Au, and Ce—Ag—Au. 1827-1834A

Chalcopyrite
The Ignition and Combustion of Chalcopyrite Concentrate Particles Under Suspension-Smelting Conditions. 975-985B

Charging
Surface Hardening of Ti—6Al—4V Alloy by Electrochemical Hydrogenation. 1181-1185A

Charpy impact tests
See Impact tests

Charring
See Combustion

Chemical analysis
See Qualitative analysis
Quantitative analysis
Spectroscopy

Chemical composition, High temperature effects
Compositional Changes in Aluminum—Lithium-Base Alloys Caused by Oxidation. 2279-2288A

Chemical composition, Welding effects
Calculation of Weld Metal Composition Change in High-Power Conduction Mode Carbon Dioxide Laser-Welded Stainless Steels. 145-155B

Chemical equilibrium
Calculation of Sulfide Capacities of Multicomponent Slags. 817-825B
Oxygen Deleading of Lead—Bismuth Alloys. 839-846B
Determination of Standard Gibbs Energy of Formation of Ca_3N_2. 907-909B
Discussion of "Dissolution Equilibrium of Magnesium Vapor in Liquid Iron". 909-910B
Thermodynamics of Si—C—O System. 1212-1214A
An Improved Computer Program for Equilibrium Calculations. 1882-1889A

Chemical equilibrium, Alloying effects
The Activity of $CuO_{0.5}$ Along the Air Isobars in the Systems Cu—O—SiO_2 and Cu—O—CaO at 1300°C. 59-62B

Chemical equilibrium, Cooling effects
Kinetics of Growth of the Ti—Co Intermetallic Compounds During Rapid Solidification. 1869-1875A

Chemical equilibrium, Field effects
Shape and Stability Computations of Electromagnetically Confined Liquid Metal Boundaries. 171-178B

Chemical equilibrium, Heating effects
Phase Chemistry and Precipitation Reactions in Maraging Steels. I. Introduction and Study of Cobalt-Containing C-300 Steel. 1221-1239B
Homogenization of Near-Gamma Titanium Aluminides: Analysis of Kinetics and Process Scaleup Feasibility. 1295-1306B
Composition and Stability of Ω Phase in an Al—Cu—Mg—Ag Alloy. 1461-1470A

Chemical equilibrium, High temperature effects
Phase Equilibria Effect on the Enhanced Liquid Phase Sintering of Tungsten—Copper. 2369-2377A

Chemical equilibrium, pH effects
Thermodynamics of the Zinc—Sulfur Dioxide—Water System. 409-417B
The Reversibility of Adsorption of Gold Cyanide on Activated Carbon. 433-440B

Chemical equilibrium, Temperature effects
Critical Evaluation and Optimization of the Thermodynamic Properties and Phase Diagrams of the MnO—TiO_2, MgO—TiO_2, FeO—TiO_2, Ti_2O_3—TiO_2, Na_2O—TiO_2, and K_2O—TiO_2 Systems. 795-805B
Phase Diagram of the Bi_2O_3—SrO—CaO Quasiternary System. 1447-1449B
Phase Relations in the System Cu—Gd—O and Gibbs Energy of Formation of $CuGd_2O_4$. 1655-1660A
An Experimental Study and Thermodynamic Evaluation of the Fe—Mo—Ti System at 1000°C. 2137-2144A

Chemical kinetics
See Reaction kinetics

Chemical processing equipment, Cladding
Microstructural Modifications in an Explosively Welded Ti/Ti Clad Material. I. Bonding Interface. 735-742A

Chemical processing equipment, Materials selection
Influence of Long-Term Aging and Superimposed Creep Stress on the Microstructure of 2.25Cr—1Mo Steel. 315-326A

Chemical properties
See Activity (chemical)

Chemical reduction
See Reduction (chemical)

Chemisorption, Alloying effects
The Measurement of the Surface Tension of Molten Fe—3.52% C—2.02% Si(—Al,—Ti,—N) Alloys by the Maximum Bubble Pressure Method. 200-203B

Chemistry
See Electrochemistry
Surface chemistry
Thermochemistry

Chlorides
See also Hydrochloric acid
Sodium chloride

Chlorides, Environment
Stress Corrosion Cracking of Ag—20Au in $HClO_4$, $AgClO_4$, and KCl Solutions by Surface Mobility. 425-433A

Chlorine compounds
See Chlorides
Perchlorates

Chromium, Alloying additive
Microhardness and Compressive Mechanical Behavior of $L1_2$ Titanium Trialuminides. 935-946A

Chromium, Alloying elements
The Effect of Annealing on the Microstructure and Mechanical Properties of Cu—X Microcomposites. (Conference Paper) 27-34A
Effect of Ti/Al Ratio and Chromium, Niobium, and Hafnium Additions on Material Factors and Mechanical Properties in TiAl. 141-150A
Environmentally Assisted Cracking of Two-Phase Iron—Manganese—Aluminum Alloys in NaCl Solution. 459-464A
The Kinetics of Composite Particle Formation During Mechanical Alloying. 647-657A
Phase Chemistry and Precipitation Reactions in Maraging Steels. IV. Discussion and Conclusions. 1251-1256B
The Effect of Nickel, Chromium, and Primary Alpha Phase on the Creep Behavior of Ti—6242Si. 1819-1826A
Design and Development of Hot Corrosion-Resistant Nickel-Base Single Crystal Superalloys by the d-Electrons Alloy Design Theory. I. Characterization of the Phase Stability. 2443-2450A

Chromium, Powder technology
Modeling of Particle Size Evolution During Mechanical Milling. 2465-2471A

Chromium, Quaternary systems
A Thermodynamic Evaluation of the Fe—Cr—Mn—C System. 1017-1025A
Thermodynamic Analysis and Evaluation of the Fe—Cr—Mn—N System. 2393-2409A

Chromium, Ternary systems
A Thermodynamic Evaluation of the Cr—Mn and Fe—Cr—Mn Systems. 1919-1933A

Chromium manganese steels, Heat treatment
The Composition of the Solid Solution, Structure, and Contact Fatigue of the Case-Hardened Layer. 1163-1168A
The Isothermal Diagram of Transformation of the Residual Austenite by Tempering. 2805-2810A

Chromium molybdenum steels, Heat treatment
Influence of Long-Term Aging and Superimposed Creep Stress on the Microstructure of 2.25Cr—1Mo Steel. 315-326A

Chromium molybdenum steels, Mechanical properties
Periodic Oxide Cracking on Fe2.25Cr1Mo Produced by High-Temperature Fatigue Tests With a Compression Hold. 327-333A

Chromium nickel steels
See Nickel chromium steels

Chromium steels
See also Chromium manganese steels
Chromium molybdenum steels
Nickel chromium steels

Chromium steels, Heat treatment
Elastic Limit and Microplastic Response of Hardened Steels. 2263-2277A

Chromium steels, Reactions (chemical)
Thermodynamic Properties of the BaO—MnO Flux System. 333-337B

Cinematography
Milling Dynamics. I. Attritor Dynamics: Results of a Cinematographic Study. 175-185A

Claddings, Microstructure
Microstructural Characterization and *In Situ* Transmission Electron Microscopy Analysis of Laser-Processed and Thermally Treated Fe—Cr—W—C Clad Coatings. 1621-1629A

Claddings, Welding
Microstructural Modifications in an Explosively Welded Ti/Ti Clad Material. I. Bonding Interface. 735-742A
Microstructural Modifications in an Explosively Welded Ti/Ti Clad Material. II. Deformation Structures Around Bonding Interface. 743-750A

Cleavage
Critical Assessment of the Local Cleavage Stress σ_i^* in Notch Specimens of C—Mn Steel. 1381-1389B

Cleavage, Microstructural effects
Micromechanisms of Brittle Fracture. (Conference Paper) 523-534A
A Dislocation Shielding Prediction of the Toughness Transition During Cleavage of Semibrittle Crystals. (Conference Paper) 535-543A
Further Investigation of Critical Events in Cleavage Fracture of C—Mn Base and Weld Steel. 659-667A

Coal fired furnaces
Zinc Smelting With Coal as the Principal Heat Source and Reducing Agent. 593-598B

Cobalt, Alloying elements
Phase Chemistry and Precipitation Reactions in Maraging Steels. II. Cobalt-Free T-300 Steel. 1233-1239B
Phase Chemistry and Precipitation Reactions in Maraging Steels. IV. Discussion and Conclusions. 1251-1256B

Cobalt, Extraction
The Separation of Nickel and Cobalt in a Mixed Sulfide Precipitate. 189-192B

Cobalt compounds, Crystal growth
Kinetics of Growth of the Ti—Co Intermetallic Compounds During Rapid Solidification. 1869-1875A

COD
See Crack opening displacement

Codes (standards)
See Standards

Coefficient of expansion
See Thermal expansion

Coefficient of thermal expansion
See Thermal expansion

Coils (windings), Magnetic properties
Electromagnetic Force Calculations for a Conical Coil. 737-748B

Coke fired furnaces
Zinc Smelting With Coal as the Principal Heat Source and Reducing Agent. 593-598B

Coking
Reduction of Iron Ore Fines by Coal Fines in a Packed Bed and Fluidized Bed Apparatus—a Comparative Study. 511-520B

Cold aging
See Aging (natural)

Cold cracking (welds)
See Weld defects

Cold deformation
See Deformation

Cold ductility
See Ductility

Cold formability
See Formability

Cold forming
See Cold working

Cold isostatic pressing
On the Development of Constitutive Relations for Metallic Powders. 2071-2081A

Cold reduction
See Cold working

Cold rolling
Determination of Heat of Transformation in a Cold-Rolled Martensitic TiNi Alloy. 293-299A
Physical Asymmetry of the Crystallographic Texture of an Interstitial-Free Sheet Steel. 2009-2019A
Microstructural Evolution in Nickel During Rolling From Intermediate to Large Strains. 2021-2037A

Cold shortness
See Brittleness

Cold stretching
See Stretching

Cold working
See also Cold rolling
An Assessment of Cold Work Effects on Strain-Controlled Low-Cycle Fatigue Behavior of Type 304 Stainless Steel. 913-924A
Simulated Hot Working, Cold Working, and Annealing of Aluminum-Containing Steels. 1589-1596A

Columbium
See Niobium

Columbium base alloys
See Niobium base alloys

Columbium compounds
See Niobium compounds

Combustibility
See Flammability

Combustion
Mathematical Modeling of Postcombustion in a KOBM Converter. 179-188B
Combustion Reaction of $Ni_{40}Ti_{60}$ During Mechanical Alloying in Oxygen Atmosphere. 225-227A
A Real-Time Gravimetric Instrument for Combustion Studies of Metallic Materials. 395-397B
An Investigation of the Effect of Porosity and Diluents on Micropyretic Synthesis. 617-628A

Compliance (elasticity)
See Modulus of elasticity

Components
See Aircraft components
Automotive components
Bearings
Engine components
Rotors

Composite materials
See Fiber composites
Laminates
Particulate composites
Whisker composites

Compositions
See Chemical composition
Eutectic composition

Compounds
See Aluminum compounds
Bismuth compounds
Intermetallics
Lead compounds
Tin compounds

Compression casting
See Pressure casting

Compression strength
See Compressive strength

Compressive modulus
See Modulus of elasticity

Compressive properties
See Compressive strength

Compressive strength, Alloying effects
Microhardness and Compressive Mechanical Behavior of $L1_2$ Titanium Trialuminides. 935-946A

Compressive strength, Composition effects
Strength, Fracture, and Fatigue Behavior of Advanced High-Temperature Intermetallics Reinforced With Ductile Phases. (Conference Paper) 585-600A

Compressive strength, Microstructural effects
Microstructural Features of Flow Instability in α-Titanium Cylinders Under High Strain Rate Compression at 25-400°C. 2513-2520A

Compressive strength, Stress effects
Residual Stresses and Their Effects on Deformation in Particle-Reinforced Metal-Matrix Composites. 2487-2496A

Compressive yield strength
See Compressive strength

Computer control
Selective Laser Sintering of Intermetallics. 757-759A

Automatic Control of the Carbon Potential of Furnace Atmospheres Without Adding Enriched Gas. 881-888B
Shear Rate Thickening Flow Behavior of Semisolid Slurries. 1107-1116A
Small Fatigue Crack Behavior in 7075-T651 Aluminum as Monitored With Rayleigh Wave Reflection. 1773-1783A

Computer programs
Calculation of Dendrite Settling Velocities Using a Porous Envelope. 749-753B
An Improved Computer Program for Equilibrium Calculations. 1882-1889A

Computer simulation
High Nitrogen Concentration in Fe—Cr—Ni Alloys. 73-82A
Model-Based Feedback Control of Deformation Processing With Microstructure Goals. 289-300B
Correction to "Computational Modeling of Stationary Gas-Tungsten-Arc Weld Pools and Comparison to Stainless Steel 304 Experimental Results". 399B
Grain Growth of a Superplastic 7475 Aluminum Alloy. 493-495A
Numerical Simulation of Solidification of Molten Aluminum Alloys in Cylindrical Molds. 677-684B
Inclusion Behavior and Heat-Transfer Phenomena in Steelmaking Tundish Operations. I. Aqueous Modeling. 755-765B
Empowerment With Knowledge—Toward the Intelligent Mold for the Continuous Casting of Steel Billets. 917-935B
Simulation of Metal Solidification Using a Cellular Automaton. 1045-1053B
A Better Sheet Formability Test. 1143-1151A
Computer Simulation of Martensitic Transformations in Constrained, Two-Dimensional Crystals Under External Stress. 1281-1294B
Fundamental Phenomena Governing Heat Transfer During Rolling. 1307-1320B
Computer Simulation of the Forging of Fine Grain IN-718 Alloy. 2061-2071A
Computer Simulation of VC Precipitation at Moving γ/α Interfaces. 2195-2207A
Service Failure of Hot-Stage Turbine Blades: the Role and Mechanisms of Oxidation Ratcheting. 2313-2319A
A Model for the Graphite Formation in Ductile Cast Iron. II. Solid State Transformation Reactions. 2347-2353A

Concast
See Continuous casting

Concentration (stress)
See Stress concentration

Concentration cell corrosion
See Pitting (corrosion)

Conducting sheet analog
See Heat transmission

Conductivity
See Resistivity
Thermal conductivity

Conductivity (electrical)
See Resistivity

Contact angle
Four Wetting Phases in AlN/Al and AlN Composites/Al Systems, Models of Nonreactive, Reactive, and Composite Systems. 1391-1397B

Contact stresses
A Study of Subsurface Crack Initiation Produced by Rolling Contact Fatigue. 351-359A
The Composition of the Solid Solution, Structure, and Contact Fatigue of the Case-Hardened Layer. 1163-1168A

Contact testing
See Ultrasonic testing

Continuous casting
See also Strip casting
Modeling of Steel Grade Transition in Continuous Slab Casting Processes. 379-393B
Elaboration of Metal Matrix Composites From Thixotropic Alloy Slurries Using a New Magnetohydrodynamic Caster. 493-510B
Real-Time Simulation of Heat Transfer in Continuous Casting. 685-693B
Inclusion Behavior and Heat-Transfer Phenomena in Steelmaking Tundish Operations. I. Aqueous Modeling. 755-765B
Inclusion Behavior and Heat-Transfer Phenomena in Steelmaking Tundish Operations. II. Mathematical Model for Liquid Steel in Tundishes. 767-777B
Inclusion Behavior and Heat-Transfer Phenomena in Steelmaking Tundish Operations. III. Applications—Computational Approach to Tundish Design. 779-788B
Measurement of Velocity in High-Temperature Liquid Metals. 1009-1022B

Continuous casting, Quality control
Empowerment With Knowledge—Toward the Intelligent Mold for the Continuous Casting of Steel Billets. 917-935B

Contraction
See Shrinkage

Control
See Process control

Controlled atmospheres
Automatic Control of the Carbon Potential of Furnace Atmospheres Without Adding Enriched Gas. 881-888B

Convection
The Nature and Influence of Convection on the Directional Dendritic Solidification of a Metal Alloy Analog, NH_4Cl, and H_2O. 669-675B

Convection, Diffusion effects
The Detection of Solutal Convection During Electrochemical Measurement of the Oxygen Diffusivity in Liquid Tin. 91-100B

Cooling
See Freezing
Supercooling

Cooling rate
Mechanisms of Porosity Formation During Solidification: a Theoretical Analysis. 349-364B
Three-Dimensional Probabilistic Simulation of Solidification Grain Structures: Application to Superalloy Precision Castings. 467-479A
Study of the Mechanism of Grain Refinement of Aluminum After Additions of Titanium- and Boron-Containing Master Alloys. 481-491A
The Nature and Influence of Convection on the Directional Dendritic Solidification of a Metal Alloy Analog, NH_4Cl, and H_2O. 669-675B
Numerical Simulation of Solidification of Molten Aluminum Alloys in Cylindrical Molds. 677-684B
Real-Time Simulation of Heat Transfer in Continuous Casting. 685-693B
Structure and Decomposition of A13-Type Phase in Rapidly Solidified High-Carbon Cr—Si Iron Alloy. 751-756A
The Solidification Behavior of 8090 Al—Li Alloy. 857-865B
Spray Deposition of a Sn—40 wt.% Pb Alloy With Uniform Droplets. 1187-1193A
Influence of Thermally Induced Plasticity on the Bauschinger Effect of SiC/Al Composites. 1879-1882A
An Analytical Model for Solute Redistribution During Solidification of Planar, Columnar, or Equiaxed Morphology. 2107-2118A
A Model for the Graphite Formation in Ductile Cast Iron. II. Solid State Transformation Reactions. 2347-2353A
Synthesis of TiC Particulates and Their Segregation During Solidification in In Situ Processed Al—TiC Composites. 2358-2362A

Cooling rate, Alloying effects
Extent of Depression in Eutectic Temperature at Two Levels of Silicon in Al—Si—Mg Alloys Processed at Different Cooling Rates. 2810-2812A

Copper, Alloying additive
Microhardness and Compressive Mechanical Behavior of $L1_2$ Titanium Trialuminides. 935-946A

Copper, Alloying elements
The Activity of $CuO_{0.5}$ Along the Air Isobars in the Systems Cu—O—SiO_2 and Cu—O—CaO at 1300°C. 59-62B
A Model for the Thermal Properties of Liquid-Phase Sintered Composites. 1745-1752A

Copper, Binary systems
Metastable Crystalline and Amorphous Structures Formed in the Cu—W System by Vapor Deposition. 1027-1037A

Copper, Casting
Experimental Investigation of the Phenomenon of Centrifuging of Liquids. 463-473B

Copper, Composite materials
Thermal Conductivity and Thermal Expansion of Graphite Fiber-Reinforced Copper Matrix Composites. (Conference Paper) 43-52A

Copper, Crystal growth
How Are New Orientations Generated During Primary Recrystallization?en 225-239B

Copper, Extraction
Quantitative Method for Silica Flux Evaluation. 63-73B
A General Model for Leaching of One or More Solid Reactants From Porous Ore Particles. 157-169B
Recovery of Copper From α-Etchant Solution by Electrowinning and Cementation. 192-197B
Leaching of Cu_2O With Aqueous Solution of Sulfur Dioxide. 563-570B
Accretion Growth on Single-Pipe Tuyeres. I. Model Development and Preliminary Analysis. 571-582B
Accretion Growth on Single-Pipe Tuyeres. II. Model Results and Discussion. 583-591B
A Finite Element Modeling Analysis of Flow and Mass Transfer Through Nonspherical Bubbles in a Copper Converter. 617-627B
Use of X-Ray Diffraction in a Study of Ammonia Leaching of Multimetal Sulfides. 937-945B
A Mathematical Model for Heap Leaching of One or More Solid Reactants From Porous Ore Pellets. 1087-1102B
An Improved Computer Program for Equilibrium Calculations. 1882-1889A

Copper, Mechanical properties
The Stresses in a Face-Centered Cubic Single Crystal Under Uniaxial Tension. 875-881A
Large Deformation Simple Compression of a Copper Single Crystal. 989-992A

Copper, Powder technology
A Stereological Model of the Degree of Grain Boundary-Pore Contact During Sintering. 1497-1505A
Modeling of Particle Size Evolution During Mechanical Milling. 2465-2471A

Copper, Reactions (chemical)
Thermodynamics of Nitrogen in BaO—TiO_x Melts. 131-138B
How Fast Can We Go? The Status of our Knowledge of the Rates of Gas—Liquid Metal Reactions. 241-258B

Copper, Recovering
Thermodynamic Activity of Antimony at Dilute Solutions in Carbon-Saturated Liquid Iron. 963-973B

Copper, Reduction (chemical)
The Ignition and Combustion of Chalcopyrite Concentrate Particles Under Suspension-Smelting Conditions. 975-985B
The Mineralogical Characterization of Tellurium in Copper Anodes. 997-1007B

Copper, Refining
Activities in Cu_2S—FeS—SnS Melts at 1200°C. 301-308B

^{197}Au Mössbauer Study of Copper Refinery Anode Slimes. 457-462B

Copper, Structural hardening
Dislocation Structure Evolution in Torsion of Pure Copper. 361-367A

Copper, Ternary systems
Phase Relations in the System Cu—Gd—O and Gibbs Energy of Formation of $CuGd_2O_4$. 1655-1660A
Thermochemistry of Binary and Ternary Noble Metal Alloys: the Systems Cu—Ce, Ag—Ce, Au—Ce, Cu—Ag—Au, and Ce—Ag—Au. 1827-1834A

Copper base alloys
See also Brasses
Bronzes

Copper base alloys, Bonding
High-Strength High-Conductivity Cu—Nb Microcomposite Sheet Fabricated via Multiple Roll Bonding. (Conference Paper) 15-20A

Copper base alloys, Composite materials
Reaction Layer Formation at the Graphite/Copper—Chromium Alloy Interface. (Conference Paper) 53-60A

Copper base alloys, Corrosion
A Mechanism for Transgranular Stress-Corrosion Cracking. (Conference Paper) 553-559A

Copper base alloys, Diffusion
Atomic Mechanisms of Diffusional Nucleation and Growth and Comparisons With Their Counterparts in Shear Transformations. 241-276A

Copper base alloys, Heat treatment
The Effect of Annealing on the Microstructure and Mechanical Properties of Cu—X Microcomposites. (Conference Paper) 27-34A

Copper base alloys, Mechanical properties
Internal Friction Due to Thermoelastic Martensitic Transformation. 1067-1071A

Copper base alloys, Metal working
Strength and Electrical Conductivity of a Deformation-Processed Cu—5 vol.% Nb Composite. (Conference Paper) 7-14A

Copper base alloys, Microstructure
How Are New Orientations Generated During Primary Recrystallization?en 1001-1015A

Copper base alloys, Phase transformations
Time Dependence of Internal Friction and Shape Change in Cu—Zn—Al Shape Memory Alloys. 2743-2749A

Copper base alloys, Powder technology
Deformation-Processed Wire Prepared From Gas-Atomized Cu—Nb Alloy Powders. (Conference Paper) 21-26A
Strength and Electrical Conductivity of Deformation-Processed Cu—15 Vol% Fe Alloys Produced by Powder Metallurgy Techniques. (Conference Paper) 35-42A
The Kinetics of Composite Particle Formation During Mechanical Alloying. 647-657A

Copper base alloys, Reduction (chemical)
The Solubility of Copper in Lime-Saturated and Calcium Ferrite-Saturated Liquid Iron Oxide. 265-269B

Copper ores
See Chalcopyrite

Copper plating
Glue Analysis and Behavior in Copper Electrolyte. 277-287B

Core hardness
See Hardness

Corex process
See Ironmaking

Corrodents
See Corrosion environments

Corrosion
See Stress corrosion cracking
Transgranular corrosion

Corrosion cracking
See Stress corrosion cracking

Corrosion environments
Effect of Microstructure on the Corrosion and Deformation Behavior of a Newly Developed 6Mn—5Cr—1.5Cu Corrosion-Resistant White Iron. 445-457A
Environmentally Assisted Cracking of Two-Phase Iron—Manganese—Aluminum Alloys in NaCl Solution. 459-464A
Hydrogen-Facilitated Corrosion and Stress Corrosion Cracking of Austenitic Stainless Steel of Type 310. 959-962A

Corrosion potential
Microstructural Control in an Aluminum Core Alloy for Brazing Sheet Applications. 1935-1942A

Corrosion potential, Environmental effects
Stress Corrosion Cracking of Ag—20Au in $HClO_4$, $AgClO_4$, and KCl Solutions by Surface Mobility. 425-433A

Corrosion rate
Hydrogen-Facilitated Corrosion and Stress Corrosion Cracking of Austenitic Stainless Steel of Type 310. 959-962A

Corrosion resistance
Microstructural Control in an Aluminum Core Alloy for Brazing Sheet Applications. 1935-1942A

Corrosion resistance, Alloying effects
Boron and Off-Stoichiometry Effects on the Strength and Ductility of AlRu. 227-230A
Environmentally Assisted Cracking of Two-Phase Iron—Manganese—Aluminum Alloys in NaCl Solution. 459-464A
Design and Development of Hot Corrosion-Resistant Nickel-Base Single-Crystal Superalloys by the d-Electrons Alloy Design Theory. II. Effects of Refractory Metals Titanium, Tantalum, and Niobium on Microstructures and Properties. 2451-2464A

Corrosion resistance, Composition effects
Design and Development of Hot Corrosion-Resistant Nickel-Base Single Crystal Superalloys by the d-Electrons Alloy Design Theory. I. Characterization of the Phase Stability. 2443-2450A

Corrosion resistance, Microstructural effects
Effect of Microstructure on the Corrosion and Deformation Behavior of a Newly Developed 6Mn—5Cr—1.5Cu Corrosion-Resistant White Iron. 445-457A
Toughening Mechanisms in Intermetallics. (Conference Paper) 561-567A
A New Orientation Relationship Between M_6C Carbide and the Austenite Matrix in an Fe—Mn—Al—Mo—C Alloy. 1671-1673A
Auger Electron Spectroscopy Study of Grain Boundary Segregation in Alloy K-500. I. Behavior in As-Processed State. 1897-1907A

Corrosion resistant steels
See Stainless steels

Corundum
See Sapphire

Crack growth
See Crack propagation

Crack initiation
Dynamic Fracture Initiation Behavior of an HY-100 Steel. 901-912A
The Oxidation of Ilmenite and Its Relationship to the FeO—Fe_2O_3—TiO_2 Phase Diagram at 1073 and 1140K. 1257-1264B
Critical Assessment of the Local Cleavage Stress σ_i^* in Notch Specimens of C—Mn Steel. 1381-1389B

Crack initiation, Alloying effects
Martensite Morphology and Fracture Behavior in Intercritically Treated Medium-Carbon 2Si—6N Steel. 508-511A
Microhardness and Compressive Mechanical Behavior of $L1_2$ Titanium Trialuminides. 935-946A

Crack initiation, Composition effects
The Influence of Matrix Microstructure and TiC Reinforcement on the Cyclic Response and Fatigue Behavior of 2219 Aluminum. 2545-2557A

Crack initiation, Cooling effects
Real-Time Simulation of Heat Transfer in Continuous Casting. 685-693B
The Roles of Rare Earth Dispersoids and Process Route on the Low Cycle Fatigue Behavior of a Rapidly Solidified Powder Metallurgy Titanium Alloy. 1761-1771A
Service Failure of Hot-Stage Turbine Blades: the Role and Mechanisms of Oxidation Ratcheting. 2313-2319A

Crack initiation, Deformation effects
A Study of Subsurface Crack Initiation Produced by Rolling Contact Fatigue. 351-359A
An Assessment of Cold Work Effects on Strain-Controlled Low-Cycle Fatigue Behavior of Type 304 Stainless Steel. 913-924A

Crack initiation, Environmental effects
Effects of Hydrogen on the Mixed Mode I/III Toughness of a High-Purity Rotor Steel. 1450-1451B
Environmental Fatigue of an Al—Li—Cu Alloy. II. Microscopic Hydrogen Cracking Processes. 2751-2762A

Crack initiation, Heating effects
Effects of Heat Treatment and Reinforcement Size on Reinforcement Fracture During Tension Testing of a SiC_p Discontinuously Reinforced Aluminum Alloy. 2531-2543A

Crack initiation, High temperature effects
Strain-Rate Effects on High-Temperature Fracture Behavior of a 2124Al—SiC_w Composite. 1125-1131A
Environmental Interactions in High-Temperature Fatigue Crack Growth of Ti-1100. 1321-1332B

Crack initiation, Microstructural effects
Toughening Mechanisms in Titanium Aluminides. (Conference Paper) 569-583A
Further Investigation of Critical Events in Cleavage Fracture of C—Mn Base and Weld Steel. 659-667A
On the Nature and Crystallographic Orientation of Subsurface Cracks in High Cycle Fatigue of Ti—6Al—4V. 669-680A
Effect of Melt Cleanliness on the Properties of an Al—10 wt.% Si—10 vol.% SiC(p) Composite. 1631-1645A
Morphological Effect on the Mechanical Behavior of a Two-Phase Ti_3Al—Nb Alloy. 1785-1793A
Effects of Processing on the Transverse Fatigue Properties of Low-Sulfur AISI 4140 Steel. 2701-2708A

Crack initiation, Stress effects
Stress Distribution in Particulate-Reinforced Metal-Matrix Composites Subjected to External Load. 197-207A
Periodic Oxide Cracking on Fe2.25Cr1Mo Produced by High-Temperature Fatigue Tests With a Compression Hold. 327-333A
Residual Strain Gradient Determination in Metal Matrix Composites by Synchrotron X-Ray Energy Dispersive Diffraction. 1117-1124A
Evolution of Damage and Plasticity in Titanium-Based, Fiber-Reinforced Composites. 1597-1610A
Small Fatigue Crack Behavior in 7075-T651 Aluminum as Monitored With Rayleigh Wave Reflection. 1773-1783A
Residual Stress Measurements by X-Ray Diffraction in the Ferritic/Austenitic Interface Weldment. 2095-2106A
Microstructural Examination of Fatigue Crack Tip in High Strength Steel. 2209-2216A
Fatigue and Creep—Fatigue Damage of Austenitic Stainless Steels Under Multiaxial Loading. 2247-2261A

Crack initiation, Welding effects
Fracture Toughness Analysis of Heat-Affected Zones in High-Strength Low-Alloy Steel Welds. 1133-1141A

Crack opening displacement, Microstructural effects
Fatigue Crack Growth Through the Lamellar Microstructure of an Alloy Based on TiAl at 25 and 800°C. 1555-1574A

Crack propagation
Adiabatic Shear Band Formation in Al—SiC_w Composites. 895-900A
Dynamic Fracture Initiation Behavior of an HY-100 Steel. 901-912A
A Transgranular Fatigue Crack Growth Model Based on Restricted Slip Reversibility. 1373-1380B

Crack propagation, Alloying effects
Environmentally Assisted Cracking of Two-Phase Iron—Manganese—Aluminum Alloys in NaCl Solution. 459-464A
Metal-Induced Embrittlement of Low-Carbon Steel by Indium in Association With Tellurium. 504-508A

Crack propagation, Composition effects
Strength, Fracture, and Fatigue Behavior of Advanced High-Temperature Intermetallics Reinforced With Ductile Phases. (Conference Paper) 585-600A
Hydrogen Tolerance of a Ti_3Al-Based Alloy. 1095-1106A

Crack propagation, Deformation effects
A Study of Subsurface Crack Initiation Produced by Rolling Contact Fatigue. 351-359A
An Assessment of Cold Work Effects on Strain-Controlled Low-Cycle Fatigue Behavior of Type 304 Stainless Steel. 913-924A

Crack propagation, Environmental effects
Stress Corrosion Cracking of Ag—20Au in $HClO_4$, $AgClO_4$, and KCl Solutions by Surface Mobility. 425-433A
A Mechanism for Transgranular Stress-Corrosion Cracking. (Conference Paper) 553-559A
Environmental Fatigue of an Al—Li—Cu Alloy. II. Microscopic Hydrogen Cracking Processes. 2751-2762A

Crack propagation, Heating effects
Mechanical Behavior of Double-Aged AA8090. 833-841A

Crack propagation, High temperature effects
Environmental Interactions in High-Temperature Fatigue Crack Growth of Ti-1100. 1321-1332B
The Effects of Prolonged Thermal Exposure on the Fracture and Fatigue Behavior of Aluminum—Lithium Alloy 8090. 2233-2245A

Crack propagation, Microstructural effects
The Role of Inclusion and Pore Content on the Fracture Toughness of Powder-Processed Blended Elemental Titanium Alloys. 161-174A
A Dislocation Shielding Model for the Fracture of Semibrittle Polycrystals. 343-350A
Micromechanisms of Brittle Fracture. (Conference Paper) 523-534A
A Dislocation Shielding Prediction of the Toughness Transition During Cleavage of Semibrittle Crystals. (Conference Paper) 535-543A
Toughening Mechanisms in Titanium Aluminides. (Conference Paper) 569-583A
Further Investigation of Critical Events in Cleavage Fracture of C—Mn Base and Weld Steel. 659-667A
On the Nature and Crystallographic Orientation of Subsurface Cracks in High Cycle Fatigue of Ti—6Al—4V. 669-680A
Microstructural Toughening Mechanisms in γ-TiAl · 20% TiCb as Determined by FRASTA. 883-894A
Fatigue Crack Growth Through the Lamellar Microstructure of an Alloy Based on TiAl at 25 and 800°C. 1555-1574A
Intrinsic Fatigue Crack Growth Rates for Al—Li—Cu—Mg Alloys in Vacuum. 1807-1817A
Matrix Penetration of W/W Grain Boundaries and Its Effect on Mechanical Properties of 93W—5.6Ni—1.4Fe Heavy Alloy. 2411-2416A
Scaling Laws for Fatigue Crack Growth of Large Cracks in Steels. 2473-2486A

Crack propagation, Stress effects
Rate and Environmental Effects on Fracture of a Two-Phase TiAl-Alloy. 113-125A
Periodic Oxide Cracking on Fe2.25Cr1Mo Produced by High-Temperature Fatigue Tests With a Compression Hold. 327-333A
The Growth of Small Fatigue Cracks in A286 Steel. 689-700A
Failure Mechanisms in SiC-Fiber Reinforced 6061 Aluminum Alloy Composites Under Monotonic and Cyclic Loading. 721-734A
Layer Thickness Effect on Ductile Tensile Fracture of Ultrahigh Carbon Steel—Brass Laminates. 1647-1653A
Small Fatigue Crack Behavior in 7075-T651 Aluminum as Monitored With Rayleigh Wave Reflection. 1773-1783A
Cyclic Deformation and Fracture Behavior of Aluminum Alloy 6061 Under the Action of Positive Mean Stresses. 2083-2093A
Microstructural Examination of Fatigue Crack Tip in High Strength Steel. 2209-2216A
A Theoretical Evaluation of Crack Closure. 2225-2232A
Fatigue and Creep—Fatigue Damage of Austenitic Stainless Steels Under Multiaxial Loading. 2247-2261A

Crack resistance
See Crack propagation

Cracking (fracturing)
See also Crack initiation
Crack propagation
Stress corrosion cracking

Cracking (fracturing), Diffusion effects
Hydrogen Diffusion and Its Relevance to Intergranular Cracking in Nickel. 105-112A

Cratering (welding)
See Weld defects

Creep (materials)
See also Creep rate
Creep rupture strength
Creep strength

Creep (materials), Deformation effects
Model-Based Feedback Control of Deformation Processing With Microstructure Goals. 289-300B
Creep Behavior of an Al-2.0 Wt.%.Li Alloy in the Temperature Range 300-500°C. 2001-2007A

Creep (materials), High temperature effects
Environmental Interactions in High-Temperature Fatigue Crack Growth of Ti-1100. 1321-1332B

Creep limit
See Creep (materials)

Creep properties
See Creep (materials)

Creep rate, Alloying effects
The Effect of Nickel, Chromium, and Primary Alpha Phase on the Creep Behavior of Ti—6242Si. 1819-1826A

Creep rate, Stress effects
Theoretical Calculation of Anisotropic Creep and Stress—Strain Behavior for a Class of Metal-Matrix Composites. 2049-2059A
Cyclic Deformation and Fracture Behavior of Aluminum Alloy 6061 Under the Action of Positive Mean Stresses. 2083-2093A
Creep Regimes for Directionally Solidified Al—Al_3Ni Eutectic Composite. 2721-2730A
The Influence of Matrix Microstructure and Particle Reinforcement on the Creep Behavior of 2219 Aluminum. 2731-2741A

Creep resistance
See Creep strength

Creep rupture strength, High temperature effects
Influence of Long-Term Aging and Superimposed Creep Stress on the Microstructure of 2.25Cr—1Mo Steel. 315-326A

Creep rupture strength, Stress effects
Preliminary Evaluation of Tensile and Stress—Rupture Behavior of Tungsten + 24 at.% Rhenium + 0.4 at.% HfC Wire. 209-214A

Creep strength, Composition effects
Strength and Toughness of a Nb/Nb_5Si_3 Composite. 501-504A
Hydrogen Tolerance of a Ti_3Al-Based Alloy. 1095-1106A

Creep strength, Heating effects
Age-Hardening Behavior of Titanium Alloy Ti—6Al—5Zr—0.5Mo—0.25Si. 763-766A

Creep strength, High temperature effects
High-Temperature Creep of the Intermetallic Alloy Ni_3Al. 335-341A

Creep strength, Stress effects
Rate and Environmental Effects on Fracture of a Two-Phase TiAl-Alloy. 113-125A
Fatigue and Creep—Fatigue Damage of Austenitic Stainless Steels Under Multiaxial Loading. 2247-2261A
The Influence of Matrix Microstructure and Particle Reinforcement on the Creep Behavior of 2219 Aluminum. 2731-2741A

Creep tests
High-Temperature Creep of the Intermetallic Alloy Ni_3Al. 335-341A
The Effect of Nickel, Chromium, and Primary Alpha Phase on the Creep Behavior of Ti—6242Si. 1819-1826A
Creep Behavior of an Al-2.0 Wt.%.Li Alloy in the Temperature Range 300-500°C. 2001-2007A

Creeping
See Creep (materials)

Critical temperature
See Eutectic temperature

Cross tension test
See Tension tests

Crushing strength
See Compressive strength

Cryogenic quenching
The Microstructural Evolution, Crystallography, and Thermal Processing of Ultrahigh Carbon Fe—1.85% C Melt-Spun Ribbon. 809-818A
The Mechanical Stability of Austenite and Cryogenic Toughness of Ferritic Fe—Mn—Al Alloys. 1333-1343B

Crystal defects
See Dislocations
Stacking faults

Crystal growth, Diffusion effects
Atomic Mechanisms of Diffusional Nucleation and Growth and Comparisons With Their Counterparts in Shear Transformations. 241-276A

Crystal growth, Pressure effects
Mechanisms of Heterogeneous Nucleation of Pores in Metals and Alloys. 1845-1856A

Crystal lattices
See Cubic lattice

Crystal orientation
See Crystal structure

Crystal structure
See also Substructures (crystalline)
Widmanstatten structure
X-Ray Elastic Constants in Textured Zirconium-Base Materials. 389-396A
An Analytical Description for the Deformation Response of Ni_3Al Alloys in the Anomalous Regime. 397-401A
A Dislocation Shielding Prediction of the Toughness Transition During Cleavage of Semibrittle Crystals. (Conference Paper) 535-543A
Toughening Mechanisms in Intermetallics. (Conference Paper) 561-567A

On the Nature and Crystallographic Orientation of Subsurface Cracks in High Cycle Fatigue of Ti—6Al—4V. 669-680A
Metastable Crystalline and Amorphous Structures Formed in the Cu—W System by Vapor Deposition. 1027-1037A
Spontaneous Evolution of Microstructure in Materials. 1689-1721A
Intrinsic Fatigue Crack Growth Rates for Al—Li—Cu—Mg Alloys in Vacuum. 1807-1817A
Effect of Stretching on the Precipitation Kinetics of an Al—2.0Li—2.8Cu—0.5Mg(—0.13Zr) Alloy. 2613-2621A

Crystal structure, Alloying effects
A New Orientation Relationship Between M_6C Carbide and the Austenite Matrix in an Fe—Mn—Al—Mo—C Alloy. 1671-1673A

Crystal structure, Cooling effects
Structure and Decomposition of A13-Type Phase in Rapidly Solidified High-Carbon Cr—Si Iron Alloy. 751-756A
Kinetics of Growth of the Ti—Co Intermetallic Compounds During Rapid Solidification. 1869-1875A

Crystal structure, Deformation effects
A Structural Study of Oxidation in a Zirconia-Toughened Alumina Fiber-Reinforced Fe_3Al Composite. 435-443A
Elaboration of Metal Matrix Composites From Thixotropic Alloy Slurries Using a New Magnetohydrodynamic Caster. 493-510B
Physical Asymmetry of the Crystallographic Texture of an Interstitial-Free Sheet Steel. 2009-2019A
Microstructural Evolution in Nickel During Rolling From Intermediate to Large Strains. 2021-2037A
Interfacial Shear Strength of Cast and Directionally Solidified NiAl—Sapphire Fiber Composites. 2119-2125A

Crystal structure, Environmental effects
Calorimetrically Measured Enthalpies for the Reaction of Hafnium With $H(D)_2$ (g). 2623-2627A

Crystal structure, Heating effects
Transformation to Ni_5Al_3 in a 63.0 At.% Ni—Al Alloy. 83-94A
Effect of Microstructure on the Corrosion and Deformation Behavior of a Newly Developed 6Mn—5Cr—1.5Cu Corrosion-Resistant White Iron. 445-457A
Crystallographic Orientation Relationships Among η-Ni_3Ti Precipitate, Reverted Austenite, and Martensitic Matrix in Fe—10Cr—10Ni—2W Maraging Alloy. 2643-2652A

Crystal structure, High temperature effects
Formation of $L1_2$-Structured Ni_3Si. 283-292A
Magnesium Silicide Intermetallic Alloys. 2383-2391A

Crystal structure, Radiation effects
Microstructural Characterization and *In Situ* Transmission Electron Microscopy Analysis of Laser-Processed and Thermally Treated Fe—Cr—W—C Clad Coatings. 1621-1629A

Crystal structure, Size effects
Determination of the Total Texture Function From Individual Orientation Measurements by Electron Backscattering Pattern. 2299-2311A

Crystal structure, Stress effects
Computer Simulation of Martensitic Transformations in Constrained, Two-Dimensional Crystals Under External Stress. 1281-1294B
Residual Stress Measurements by X-Ray Diffraction in the Ferritic/Austenitic Interface Weldment. 2095-2106A

Crystal structure, Temperature effects
Microstructural Changes on the Reduction of Imperial Smelting Furnace Sinters. 39-51B

Crystal structure, Welding effects
Microstructural Modifications in an Explosively Welded Ti/Ti Clad Material. II. Deformation Structures Around Bonding Interface. 743-750A

Crystallinity
See Crystal structure

Crystallization
See also Recrystallization

Crystallization, Field effects
Interdendritic Eutectic Solidification of an AlSi-7.0 Alloy Under Microgravity. 208-212B

Crystallography
Orientation Imaging: the Emergence of a New Microscopy. 819-831A

Crystals
See Polycrystals
Single crystals

Cubic lattice
Orientation Imaging: the Emergence of a New Microscopy. 819-831A

Cupping
See Deep drawing

Curves
See Stress strain curves

Cyanidation
Reaction Mechanism of Gold Dissolution With Bromine. 419-431B
The Reversibility of Adsorption of Gold Cyanide on Activated Carbon. 433-440B

Cyanide process
See Cyanidation

Cycles
See Stress cycle

Cyclic loads
Failure Mechanisms in SiC-Fiber Reinforced 6061 Aluminum Alloy Composites Under Monotonic and Cyclic Loading. 721-734A
Environmental Interactions in High-Temperature Fatigue Crack Growth of Ti-1100. 1321-1332B
Small Fatigue Crack Behavior in 7075-T651 Aluminum as Monitored With Rayleigh Wave Reflection. 1773-1783A
A Theoretical Evaluation of Crack Closure. 2225-2232A

Cylinders, Mechanical properties
Microstructural Features of Flow Instability in α-Titanium Cylinders Under High Strain Rate Compression at 25-400°C. 2513-2520A

Damage tolerance
Adiabatic Shear Band Formation in Al—SiC_w Composites. 895-900A
Fatigue and Creep—Fatigue Damage of Austenitic Stainless Steels Under Multiaxial Loading. 2247-2261A

Damage tolerance, Heating effects
The Mechanical Stability of Austenite and Cryogenic Toughness of Ferritic Fe—Mn—Al Alloys. 1333-1343B

Damping, Composition effects
Damping Behavior of 6061Al/Gr Metal Matrix Composites. 701-712A

Damping, Microstructural effects
Characterization of Room-Temperature Damping in Aluminum—Indium Alloys. 1611-1619A

Damping, Stress effects
Damping Characteristics of TiNi Shape Memory Alloys. 2189-2194A

Decarbonizing
See Decarburizing

Decarburizing
How Fast Can We Go? The Status of our Knowledge of the Rates of Gas—Liquid Metal Reactions. 241-258B

Decomposition
See Phase decomposition

Decomposition reactions
Reduction Kinetics of $Ni(OH)_2$ to Nickel Powder Preparation Under Hydrothermal Conditions. 557-561B

Decomposition reactions, Stress effects
Diffusion Bonding of Silicon Nitride to Austenitic Stainless Steel Without Interlayers. 1835-1843A

Deep carburizing
See Carburizing

Deep drawing
A Better Sheet Formability Test. 1143-1151A

Defects
See Casting defects
Inclusions
Weld defects

Deflagration
See Combustion

Deformability
See Formability

Deformation
See also Elastic deformation
Plastic deformation
Prestraining

Deformation, Cooling effects
Continuous Cooling Deformation Testing of Steels. 2657-2665A

Deformation resistance
Large Deformation Simple Compression of a Copper Single Crystal. 989-992A

Deforming
See Deformation

Delaminating, Stress effects
Failure Diagrams for Unidirectional Fiber Metal-Matrix Composites. 1531-1542A
Correction to "Failure Diagrams for Unidirectional Fiber Metal-Matrix Composites". 1531-1542A

Dendrite
See Dendritic structure

Dendritic structure
Microstructural Formation in Longitudinal Bicrystal Welds. 1433-1446B
Spontaneous Evolution of Microstructure in Materials. 1689-1721A

Dendritic structure, Alloying effects
High-Strength High-Conductivity Cu—Nb Microcomposite Sheet Fabricated via Multiple Roll Bonding. (Conference Paper) 15-20A
Deformation-Processed Wire Prepared From Gas-Atomized Cu—Nb Alloy Powders. (Conference Paper) 21-26A
High Nitrogen Concentration in Fe—Cr—Ni Alloys. 73-82A

Dendritic structure, Cooling effects
Three-Dimensional Probabilistic Simulation of Solidification Grain Structures: Application to Superalloy Precision Castings. 467-479A
The Nature and Influence of Convection on the Directional Dendritic Solidification of a Metal Alloy Analog, NH_4Cl, and H_2O. 669-675B
Phase Selection in Undercooled Ti_3Sn Melts. 1481-1496A
The Roles of Rare Earth Dispersoids and Process Route on the Low Cycle Fatigue Behavior of a Rapidly Solidified Powder Metallurgy Titanium Alloy. 1761-1771A
An Analytical Model for Solute Redistribution During Solidification of Planar, Columnar, or Equiaxed Morphology. 2107-2118A
Synthesis of TiC Particulates and Their Segregation During Solidification in In Situ Processed Al—TiC Composites. 2358-2362A
A Multiphase Solute Diffusion Model for Dendritic Alloy Solidification. 2787-2802A

Dendritic structure, Deformation effects
Calculation of Dendrite Settling Velocities Using a Porous Envelope. 749-753B

Dendritic structure, Field effects
Interdendritic Eutectic Solidification of an AlSi-7.0 Alloy Under Microgravity. 208-212B
Thermosolutal Convection and Macrosegregation Caused by Solute Rejection at Cell/Dendrite Tips. 1661-1669A

Dendritic structure, Heating effects
Solidification and Solid-State Transformation Mechanisms in Silicon Alloyed High-Chromium White Cast Irons. 981-988A
The Dendritic Growth of γ' Precipitates and Grain Boundary Serration in a Model Nickel-Base Superalloy. 1733-1743A
The Morphological Changes of γ' Precipitates in a Ni—8Al (st.%) Alloy During Their Coarsening. 1975-1981A

Dendritic structure, Radiation effects
Microstructural Characterization and *In Situ* Transmission Electron Microscopy Analysis of Laser-Processed and Thermally Treated Fe—Cr—W—C Clad Coatings. 1621-1629A

Dendritic structure, Welding effects
Microstructural Characterization of Incoloy 903 Weldments. 1169-1179A

Denitration
Thermodynamics of Nitrogen in BaO—TiO_x Melts. 131-138B

Densification
Hot Isostatic Pressing (HIP) of Powder Mixtures and Composites: Packing, Densification, and Microstructural Effects. 1345-1354B
On the Development of Constitutive Relations for Metallic Powders. 2071-2081A
Synthesis of Bulk and Reinforced Nickel Aluminides by Reactive Infiltration. 2161-2170A

Density
Experimental Investigation of the Phenomenon of Centrifuging of Liquids. 463-473B

Density, Deformation effects
Model-Based Feedback Control of Deformation Processing With Microstructure Goals. 289-300B
Densification and Deformation Behavior of a Porous Metal Strip During Hot Rolling. 1753-1760A

Density, Temperature effects
The Density of Liquid Iron—Carbon Alloys. 5-10B

Deoxidation
See Deoxidizing

Deoxidizing
Electrochemical Deoxidation of Titanium. 449-455B

Deoxidizing, Alloying effects
Deoxidation of Molten Titanium by Electron-Beam Remelting Technique. 599-604B

Dephosphorizing
Thermodynamics of Sulfur in BaO—CaO—CO_2 System. 325-331B
Thermodynamic Properties of the BaO—MnO Flux System. 333-337B
Thermodynamics of Phosphorus and Sulfur in the BaO—MnO Flux System Between 1573 and 1673K. 339-347B

Deposition
See Vapor deposition

Design
Design and Development of Hot Corrosion-Resistant Nickel-Base Single Crystal Superalloys by the d-Electrons Alloy Design Theory. I. Characterization of the Phase Stability. 2443-2450A

Desorption
How Fast Can We Go? The Status of our Knowledge of the Rates of Gas—Liquid Metal Reactions. 241-258B

Desorption, pH effects
The Reversibility of Adsorption of Gold Cyanide on Activated Carbon. 433-440B

Desulfurizing
Activities in Cu_2S—FeS—SnS Melts at 1200°C. 301-308B
Thermodynamics of Phosphorus and Sulfur in the BaO—MnO Flux System Between 1573 and 1673K. 339-347B
Desulfurization of Bath Smelter Metal. 441-447B

Deuterium, Environment
Calorimetrically Measured Enthalpies for the Reaction of Hafnium With $H(D)_2$ (g). 2623-2627A

Dew point
Activities in Cu_2S—FeS—SnS Melts at 1200°C. 301-308B

Diagrams
See Stress strain curves

Diamond pyramid hardness, Alloying effects
Microhardness and Compressive Mechanical Behavior of $L1_2$ Titanium Trialuminides. 935-946A

Diamond pyramid hardness, High temperature effects
Phase Equilibria Effect on the Enhanced Liquid Phase Sintering of Tungsten—Copper. 2369-2377A
Magnesium Silicide Intermetallic Alloys. 2383-2391A

Diamond pyramid hardness, Microstructural effects
Effect of Stretching on the Precipitation Kinetics of an Al—2.0Li—2.8Cu—0.5Mg(—0.13Zr) Alloy. 2613-2621A

Diamond pyramid hardness, Welding effects
Microstructural Modifications in an Explosively Welded Ti/Ti Clad Material. I. Bonding Interface. 735-742A

Die casting, Alloying effects
Thermodynamic Properties of Zinc-Rich Zinc—Aluminum Melts. 1037-1044B

Die forging
Shear Rate Thickening Flow Behavior of Semisolid Slurries. 1107-1116A

Die forming
See Die forging
Die stamping

Die stamping
Springback in Simple Axisymmetric Stampings. 925-934A

Differential thermal analysis
The Solidification Behavior of 8090 Al—Li Alloy. 857-865B

Diffraction
See X ray diffraction

Diffusion
Hydrogen Diffusion and Its Relevance to Intergranular Cracking in Nickel. 105-112A
Atomic Mechanisms of Diffusional Nucleation and Growth and Comparisons With Their Counterparts in Shear Transformations. 241-276A
A Finite Element Modeling Analysis of Flow and Mass Transfer Through Nonspherical Bubbles in a Copper Converter. 617-627B
The Reduction Mechanism of Chromite in the Presence of a Silica Flux. 987-995B
A New Model for Diffusional Growth With Nonequilibrium Interface Conditions. 1507-1516A
General Model of a Gas Transport Through Solid Porous Membranes. 1527-1530A
Effect of Stretching on the Precipitation Kinetics of an Al—2.0Li—2.8Cu—0.5Mg(—0.13Zr) Alloy. 2613-2621A

Diffusion, Cooling effects
Mechanisms of Porosity Formation During Solidification: a Theoretical Analysis. 349-364B
An Analytical Model for Solute Redistribution During Solidification of Planar, Columnar, or Equiaxed Morphology. 2107-2118A
A Model for the Graphite Formation in Ductile Cast Iron. II. Solid State Transformation Reactions. 2347-2353A
A Multiphase Solute Diffusion Model for Dendritic Alloy Solidification. 2787-2802A

Diffusion, Deformation effects
Model-Based Feedback Control of Deformation Processing With Microstructure Goals. 289-300B
Modeling of Steel Grade Transition in Continuous Slab Casting Processes. 379-393B

Diffusion, Heating effects
The Dendritic Growth of γ' Precipitates and Grain Boundary Serration in a Model Nickel-Base Superalloy. 1733-1743A
Microstructural Changes in As-Cast M2 Grade High Speed Steel During Hot Forging. 2171-2180A
Melting of Secondary-Phase Particles in Al—Mg—Si Alloys. 2629-2641A
Dilatometric Technique for Evaluation of the Kinetics of Solid-State Transformation of Maraging Steel. 2653-2656A

Diffusion, High temperature effects
Reaction Layer Formation at the Graphite/Copper—Chromium Alloy Interface. (Conference Paper) 53-60A
Compositional Changes in Aluminum—Lithium-Base Alloys Caused by Oxidation. 2279-2288A

Diffusion, Temperature effects
Determination of Diffusion Coefficients of Strontium in Liquid Aluminum. 707-709B
An Experimental Study and Thermodynamic Evaluation of the Fe—Mo—Ti System at 1000°C. 2137-2144A
Incomplete Reaction Phenomenon in High Strength Bainitic Steels. 2145-2150A
Computer Simulation of VC Precipitation at Moving γ/α Interfaces. 2195-2207A
Mechanism of TiC Formation in Al/TiC In Situ Metal-Matrix Composites. 2803-2805A

Diffusion, Welding effects
Calculation of Weld Metal Composition Change in High-Power Conduction Mode Carbon Dioxide Laser-Welded Stainless Steels. 145-155B
Effect of Activity Differences on Hydrogen Migration in Dissimilar Titanium Alloy Welds. 2763-2771A

Diffusion bonding
See Diffusion welding

Diffusion coefficient
See Diffusion

Diffusion couples
See Diffusion

Diffusion rate
A General Model for Leaching of One or More Solid Reactants From Porous Ore Particles. 157-169B

Diffusion welding
Diffusion Bonding of Silicon Nitride to Austenitic Stainless Steel Without Interlayers. 1835-1843A

Diffusivity
The Detection of Solutal Convection During Electrochemical Measurement of the Oxygen Diffusivity in Liquid Tin. 91-100B

Dimensionless numbers
See Prandtl number

Dimensions
See Particle size
Thickness

Direct quenching
See Spray quenching

Direct reduced iron, Steel making
Reduction of Iron Ore Fines by Coal Fines in a Packed Bed and Fluidized Bed Apparatus—a Comparative Study. 511-520B

Direct reduction
Reduction of Iron Ore Fines by Coal Fines in a Packed Bed and Fluidized Bed Apparatus—a Comparative Study. 511-520B

Directional solidification
Mechanisms of Porosity Formation During Solidification: a Theoretical Analysis. 349-364B
Evolution of Porosity in Long Freezing Range Alloys. 365-377B
The Nature and Influence of Convection on the Directional Dendritic Solidification of a Metal Alloy Analog, NH_4Cl, and H_2O. 669-675B
The Mechanical Behavior of Directionally Solidified Al—Ni in Compression. 713-719A
Electrical Conductivity in Directionally Solidified Pb—9Cu and Pb—20Cu Alloys. 975-979A
Thermosolutal Convection and Macrosegregation Caused by Solute Rejection at Cell/Dendrite Tips. 1661-1669A
Interfacial Shear Strength of Cast and Directionally Solidified NiAl—Sapphire Fiber Composites. 2119-2125A
Service Failure of Hot-Stage Turbine Blades: the Role and Mechanisms of Oxidation Ratcheting. 2313-2319A
Electrical Conductivity and Microstructure of Aluminum Alloys. 2355-2358A
Creep Regimes for Directionally Solidified Al—Al_3Ni Eutectic Composite. 2721-2730A
Correction to "Planar to Equiaxed Transition in the Presence of an External Wetting Surface". 3361-3368A

Directionally solidified eutectics
Interdendritic Eutectic Solidification of an AlSi-7.0 Alloy Under Microgravity. 208-212B

Dislocation climb
See Dislocation mobility

Dislocation density
The Combined Effect of Grain Size and Strain Rate on the Dislocation Substructures and Mechanical Properties in Pure Aluminum. 1153-1161A
Microstructural Study of Adiabatic Shear Band Formed by Ballistic Impact in an HY-100 Steel. 2217-2224A
Scaling Laws for Fatigue Crack Growth of Large Cracks in Steels. 2473-2486A
The Effect of Grain Size and Strain Rate On the Substructures and Mechanical Properties in Nickel 200. 2559-2568A

Dislocation density, Cooling effects
Misfit Accommodation in a Quenched and Aged Al—Cu Alloy With Silicon Particles. 1723-1731A

Dislocation density, Deformation effects
The Role of Microstructure on Strength and Ductility of Hot-Extruded Mechanically Alloyed NiAl. 1993-2000A

Dislocation density, Heating effects
Microstructural Characterisation of Near-α Titanium Alloy Ti—6Al—4Sn—4Zr—0.70Nb—0.50Mo—0.40Si. 1273-1280B
Precipitation Hardening in Nickel—Copper Base Alloy Monel K500. 2709-2719A

Dislocation density, Temperature effects
Temperature Dependence of Strain Hardening in a Dispersion-Strengthened Al—Fe—V—Si Alloy. 2589-2593A

Dislocation loops, Heating effects
Precipitation Hardening in 350 Grade Maraging Steel. 2429-2442A

Dislocation mobility
The Role of Mobile Dislocations in the Nucleation of Brittle Fracture. (Conference Paper) 545-552A

Dislocation mobility, Deformation effects
Creep Behavior of an Al-2.0 Wt.%.Li Alloy in the Temperature Range 300-500°C. 2001-2007A

Dislocation mobility, Environmental effects
Environmental Fatigue of an Al—Li—Cu Alloy. II. Microscopic Hydrogen Cracking Processes. 2751-2762A

Dislocation mobility, High temperature effects
High-Temperature Creep of the Intermetallic Alloy Ni_3Al. 335-341A

Dislocation mobility, Pressure effects
The Effects of Superimposed Hydrostatic Pressure on Deformation and Fracture. I. Monolithic 6061 Aluminum. (Conference Paper) 601-608A

Dislocation mobility, Stress effects
Creep Regimes for Directionally Solidified Al—Al_3Ni Eutectic Composite. 2721-2730A

Dislocation pinning
An Analytical Description for the Deformation Response of Ni_3Al Alloys in the Anomalous Regime. 397-401A

Dislocations
See also Dislocation loops
Edge dislocations
Screw dislocations
Hydrogen Diffusion and Its Relevance to Intergranular Cracking in Nickel. 105-112A
Atomic Mechanisms of Diffusional Nucleation and Growth and Comparisons With Their Counterparts in Shear Transformations. 241-276A
A Dislocation Shielding Model for the Fracture of Semibrittle Polycrystals. 343-350A
Dislocation Structure Evolution in Torsion of Pure Copper. 361-367A
A Dislocation Shielding Prediction of the Toughness Transition During Cleavage of Semibrittle Crystals. (Conference Paper) 535-543A
Characterization of Room-Temperature Damping in Aluminum—Indium Alloys. 1611-1619A
Effect of Stretching on the Precipitation Kinetics of an Al—2.0Li—2.8Cu—0.5Mg(—0.13Zr) Alloy. 2613-2621A

Dislocations, Heating effects
Elastic Limit and Microplastic Response of Hardened Steels. 2263-2277A

Dislocations, Stress effects
Cooperative Grain-Boundary Sliding in Mechanically Alloyed IN 90211 Alloy During High Strain Rate Superplasticity. 1208-1212A
A Theoretical Evaluation of Crack Closure. 2225-2232A

Dislocations, Temperature effects
Discussion of "An Interpretation of the Carbon Redistribution Process During Aging of High-Carbon Martensite" and Authors Reply. 2585-2589A

Dislocations, Welding effects
Microstructural Modifications in an Explosively Welded Ti/Ti Clad Material. II. Deformation Structures Around Bonding Interface. 743-750A

Dispersing
See Emulsification

Dispersion hardening
Ductile Fracture of Mechanically Alloyed Iron—Yttria Alloys. 681-687A
Nonuniform Recrystallization in a Mechanically Alloyed Nickel-Base Superalloy. 1049-1055A

Dispersion hardening alloys, Mechanical properties
Microstructure-Property Relationships in Low-Density Al—Li—Mg Alloys. 853-863A
Microstructure and Mechanical Properties of Dispersion-Strengthened High-Temperature Al—8.5Fe—1.2V—1.7Si Alloys Produced by Atomized Melt Dispersion Process. 865-873A

Dispersion hardening alloys, Microstructure
Crystallographic Texture in Mechanically Alloyed Oxide Dispersion-Strengthened MA956 and MA957 Steels. 773-779A

Dissimilar materials, Joining
Thermodynamic Study of the NiO—MgO System in the Temperature Range 1073-1473K by a Galvanic Cell Technique. 1023-1030B

Dissimilar materials, Welding
Diffusion Bonding of Silicon Nitride to Austenitic Stainless Steel Without Interlayers. 1835-1843A

Dissimilar metals, Welding
New Explosive Welding Technique to Weld Aluminum Alloy and Stainless Steel Plates Using a Stainless Steel Intermediate Plate. 2289-2297A
Effect of Activity Differences on Hydrogen Migration in Dissimilar Titanium Alloy Welds. 2763-2771A

Dissociation energy
See Free energy
Heat of formation

Dissolution
Thermodynamics of Nitrogen in BaO—TiO_x Melts. 131-138B
A General Model for Leaching of One or More Solid Reactants From Porous Ore Particles. 157-169B
The Separation of Nickel and Cobalt in a Mixed Sulfide Precipitate. 189-192B
Determination of Standard Gibbs Energies of Formation of MgO, SrO, and BaO. 487-492B
Leaching of Cu_2O With Aqueous Solution of Sulfur Dioxide. 563-570B
Experimental Investigations of Dissolution Rates of Carbonaceous Materials in Liquid Iron—Carbon Melts. 629-638B
Kinetics of the Dissolution of Pure Silver and Silver—Gold Alloys in Nitric Acid Solution. 827-837B
Oxygen and Sulfur Solubilities in Ni—Fe—S—O Melts. 847-856B
Determination of Standard Gibbs Energy of Formation of Ca_3N_2. 907-909B
Discussion of "Dissolution Equilibrium of Magnesium Vapor in Liquid Iron". 909-910B
Use of X-Ray Diffraction in a Study of Ammonia Leaching of Multimetal Sulfides. 937-945B
The Reduction Mechanism of Chromite in the Presence of a Silica Flux. 987-995B
The Mineralogical Characterization of Tellurium in Copper Anodes. 997-1007B

Dissolution, Heating effects
Homogenization of Near-Gamma Titanium Aluminides: Analysis of Kinetics and Process Scaleup Feasibility. 1295-1306B
Melting of Secondary-Phase Particles in Al—Mg—Si Alloys. 2629-2641A

Dissolution, pH effects
Reaction Mechanism of Gold Dissolution With Bromine. 419-431B

Dissolution, Temperature effects
Mechanism of TiC Formation in Al/TiC In Situ Metal-Matrix Composites. 2803-2805A

Dissolving
See Dissolution

Distillation
See Stripping (distillation)

Domains
See Magnetic domains

DR process
See Direct reduction

Drawing
See also Deep drawing
Wire drawing
Simulated Hot Working, Cold Working, and Annealing of Aluminum-Containing Steels. 1589-1596A

Drawing (heat treatment)
See Tempering

Dressing (ore)
See Beneficiation

DRI
See Direct reduced iron

Drop tests
See Impact tests

Dual phase steels
See also Duplex stainless steels

Dual phase steels, Mechanical properties
The Influence of Martensite Shape, Concentration, and Phase Transformation Strain on the Deformation Behavior of Stable Dual-Phase Steels. 301-314A
The Role of Mobile Dislocations in the Nucleation of Brittle Fracture. (Conference Paper) 545-552A

Ductile brittle transition, Alloying effects
Microhardness and Compressive Mechanical Behavior of $L1_2$ Titanium Trialuminides. 935-946A

Ductile brittle transition, Microstructural effects
A Dislocation Shielding Prediction of the Toughness Transition During Cleavage of Semibrittle Crystals. (Conference Paper) 535-543A

Ductile fracture
Dynamic Fracture Initiation Behavior of an HY-100 Steel. 901-912A

Ductile fracture, Deformation effects
Particulate Fracture During Deformation of a Spray Formed Metal-Matrix Composite. 1575-1588A

Ductile fracture, Diffusion effects
Hydrogen Diffusion and Its Relevance to Intergranular Cracking in Nickel. 105-112A

Ductile fracture, Heating effects
Microstructure and Hydrogen Effects on Fracture in the Alloy A-286. 1983-1991A

Ductile fracture, Microstructural effects
Discussion of "Void Nucleation in Constrained Silver Interlayers" and "Void Growth and Coalescence in Constrained Silver Interlayers". 1877-1878A
Matrix Penetration of W/W Grain Boundaries and Its Effect on Mechanical Properties of 93W—5.6Ni—1.4Fe Heavy Alloy. 2411-2416A

Ductile fracture, Stress effects
Ductile Fracture of Mechanically Alloyed Iron—Yttria Alloys. 681-687A

Ductile fracture, Temperature effects
Temperature-Induced Transition in Ductile Fracture Appearance of a Nitrogen-Strengthened Austenitic Stainless Steel. 2521-2529A

Ductile iron
See Nodular iron

Ductility
See also Bend ductility

Ductility, Alloying effects
Microstructure and Mechanical Behavior of Al—Li—Cu—Mg Alloy 8090 Microalloyed With Vanadium and Beryllium. 95-104A
Effect of Ti/Al Ratio and Chromium, Niobium, and Hafnium Additions on Material Factors and Mechanical Properties in TiAl. 141-150A
Boron and Off-Stoichiometry Effects on the Strength and Ductility of AlRu. 227-230A
Metal-Induced Embrittlement of Low-Carbon Steel by Indium in Association With Tellurium. 504-508A
The Kinetics of Composite Particle Formation During Mechanical Alloying. 647-657A
Microhardness and Compressive Mechanical Behavior of $L1_2$ Titanium Trialuminides. 935-946A

Ductility, Composition effects
On the Flow Behavior of Constrained Ductile Phases. 403-415A
The Influence of Matrix Microstructure and TiC Reinforcement on the Cyclic Response and Fatigue Behavior of 2219 Aluminum. 2545-2557A

Ductility, Deformation effects
Determination of Heat of Transformation in a Cold-Rolled Martensitic TiNi Alloy. 293-299A
General Aspects of the Thermomechanical Treatment of Two-Phase Intermetallic TiAl Compounds. 1795-1806A
The Role of Microstructure on Strength and Ductility of Hot-Extruded Mechanically Alloyed NiAl. 1993-2000A

Ductility, Diffusion effects
Hydrogen Diffusion and Its Relevance to Intergranular Cracking in Nickel. 105-112A

Ductility, Heating effects
The Effect of the Precipitation of Coherent and Incoherent Precipitates on the Ductility and Toughness of High-Strength Steel. 127-139A
Microstructure and Hydrogen Effects on Fracture in the Alloy A-286. 1983-1991A
Effects of Heat Treatment and Reinforcement Size on Reinforcement Fracture During Tension Testing of a SiC_p Discontinuously Reinforced Aluminum Alloy. 2531-2543A

Ductility, High temperature effects
The Effects of Prolonged Thermal Exposure on the Fracture and Fatigue Behavior of Aluminum—Lithium Alloy 8090. 2233-2245A

Ductility, Microstructural effects
The Role of Inclusion and Pore Content on the Fracture Toughness of Powder-Processed Blended Elemental Titanium Alloys. 161-174A
An Investigation of Superplasticity in a Thermomechanically Processed U—6Nb ($\alpha + \gamma_2$) Alloy. 379-388A
The Role of Mobile Dislocations in the Nucleation of Brittle Fracture. (Conference Paper) 545-552A
Toughening Mechanisms in Intermetallics. (Conference Paper) 561-567A
Toughening Mechanisms in Titanium Aluminides. (Conference Paper) 569-583A
Microstructure and Mechanical Properties of Dispersion-Strengthened High-Temperature Al—8.5Fe—1.2V—1.7Si Alloys Produced by Atomized Melt Dispersion Process. 865-873A
Microstructural Toughening Mechanisms in γ-TiAl · 20% TiCb as Determined by FRASTA. 883-894A
Effect of Melt Cleanliness on the Properties of an Al—10 wt.% Si—10 vol.% SiC(p) Composite. 1631-1645A
A New Orientation Relationship Between M_6C Carbide and the Austenite Matrix in an Fe—Mn—Al—Mo—C Alloy. 1671-1673A
Morphological Effect on the Mechanical Behavior of a Two-Phase Ti_3Al—Nb Alloy. 1785-1793A
Authors' Reply [to Discussion of "Void Nucleation in Constrained Silver Interlayers" and "Void Growth and Coalescence in Constrained Silver Interlayers"]. 1878-1879A
Scaling Laws for Fatigue Crack Growth of Large Cracks in Steels. 2473-2486A

Ductility, Orientation effects
The Mechanical Behavior of Directionally Solidified Al—Ni in Compression. 713-719A

Ductility, Pressure effects
The Effects of Superimposed Hydrostatic Pressure on Deformation and Fracture. I. Monolithic 6061 Aluminum. (Conference Paper) 601-608A
The Effect of Superimposed Hydrostatic Pressure on Deformation and Fracture. II. Particulate-Reinforced 6061 Composites. (Conference Paper) 609-615A
Strain Path Change Effects in the Local Necking of Aluminum Sheet and in the Tension of Internally Pressurized Tubes. 2691-2699A

Ductility, Stress effects
Rate and Environmental Effects on Fracture of a Two-Phase TiAl-Alloy. 113-125A
Stress Distribution in Particulate-Reinforced Metal-Matrix Composites Subjected to External Load. 197-207A
Preliminary Evaluation of Tensile and Stress—Rupture Behavior of Tungsten + 24 at.% Rhenium + 0.4 at.% HfC Wire. 209-214A
The Influence of Martensite Shape, Concentration, and Phase Transformation Strain on the Deformation Behavior of Stable Dual-Phase Steels. 301-314A
Periodic Oxide Cracking on Fe2.25Cr1Mo Produced by High-Temperature Fatigue Tests With a Compression Hold. 327-333A
Ductile Fracture of Mechanically Alloyed Iron—Yttria Alloys. 681-687A
Failure Mechanisms in SiC-Fiber Reinforced 6061 Aluminum Alloy Composites Under Monotonic and Cyclic Loading. 721-734A
Layer Thickness Effect on Ductile Tensile Fracture of Ultrahigh Carbon Steel—Brass Laminates. 1647-1653A
Theoretical Calculation of Anisotropic Creep and Stress—Strain Behavior for a Class of Metal-Matrix Composites. 2049-2059A

Ductility, Temperature effects
Temperature Dependence of Strain Hardening in a Dispersion-Strengthened Al—Fe—V—Si Alloy. 2589-2593A

Duplex stainless steels, Mechanical properties
Scaling Laws for Fatigue Crack Growth of Large Cracks in Steels. 2473-2486A

Dynamic loads
See Loads (forces)

Dynamic tests
See Impact tests

Dynamics
See Kinetics

Dynapak extrusion
See Extrusion

Dynapak process
See Extrusion

Edge dislocations
The Role of Mobile Dislocations in the Nucleation of Brittle Fracture. (Conference Paper) 545-552A

Elastic anisotropy
The Stresses in a Face-Centered Cubic Single Crystal Under Uniaxial Tension. 875-881A

Elastic constants
See also Elastic anisotropy
Elastic limit
Modulus of elasticity

Elastic constants, Microstructural effects
X-Ray Elastic Constants in Textured Zirconium-Base Materials. 389-396A

Elastic deformation
Deformation-Induced Residual Stress Changes in SiC Whisker-Reinforced 6061 Aluminum Composites. 187-196A

Elastic limit, Heating effects
Elastic Limit and Microplastic Response of Hardened Steels. 2263-2277A

Elastic modulus
See Modulus of elasticity

Elastic properties
See Elastic constants

Elasticity
See also Pseudoelasticity
Viscoelasticity

Elasticity, Cooling effects
Misfit Accommodation in a Quenched and Aged Al—Cu Alloy With Silicon Particles. 1723-1731A

Elasticity, Deformation effects
Particulate Fracture During Deformation of a Spray Formed Metal-Matrix Composite. 1575-1588A

Elasticity, Heating effects
The Morphological Changes of γ' Precipitates in a Ni—8Al (at.%) Alloy During Their Coarsening. 1975-1981A

Elasticity, Microstructural effects
X-Ray Elastic Constants in Textured Zirconium-Base Materials. 389-396A

Elasticity, Stress effects
Residual Strain Gradient Determination in Metal Matrix Composites by Synchrotron X-Ray Energy Dispersive Diffraction. 1117-1124A
Influence of Thermally Induced Plasticity on the Bauschinger Effect of SiC/Al Composites. 1879-1882A

Electric assemblies
See Electronic devices

Electric batteries
Electrical Conductivity in Directionally Solidified Pb—9Cu and Pb—20Cu Alloys. 975-979A

Electric components
See Electronic devices

Electric devices
See Electronic devices

Electric equipment
See Coils (windings)
Electric batteries
Electric wire
Electronic devices

Electric furnaces
See Electric induction furnaces

Electric induction furnaces
Measurement of Velocity in High-Temperature Liquid Metals. 1009-1022B

Electric lamps
See Incandescent lamps

Electric potential
Thermodynamic Properties of Zinc-Rich Zinc—Aluminum Melts. 1037-1044B

Electric welding
See Spot welding

Electric wire, Microstructure
Potassium Bubbles in Tungsten Wire. 1073-1084A

Electrical conductivity
See Resistivity

Electrical phenomena
See Electric potential

Electrical properties
See Lorenz number
Resistivity

Electrical resistivity
See Resistivity

Electroceramics
See Ceramics

Electrochemistry
The Detection of Solutal Convection During Electrochemical Measurement of the Oxygen Diffusivity in Liquid Tin. 91-100B
Reaction Mechanism of Gold Dissolution With Bromine. 419-431B
Electrochemistry of *Thiobacillus ferrooxidans* Interactions With Pyrite. 717-727B

Electrochemistry, Temperature effects
Hydrogen Probe Equipped With $SrCeO_3$-Based Proton Conductor and Ca/CaH_2 Reference Electrode. 789-794B

Electrode potentials
See Corrosion potential

Electrodeposition
See Electroplating

Electrogalvanizing
See Electroplating

Electrolysis
Discussion of "High-Temperature Thermodynamic Properties of the Vanadium Carbides V_2C and $VC_{0.73}$ Determined Using a Galvanic Cell Technique". 203-204B
Author's Reply. 205-208B
Glue Analysis and Behavior in Copper Electrolyte. 277-287B
Oxygen and Sulfur Solubilities in Ni—Fe—S—O Melts. 847-856B

Electrolytic cells
Discussion of "High-Temperature Thermodynamic Properties of the Vanadium Carbides V_2C and $VC_{0.73}$ Determined Using a Galvanic Cell Technique". 203-204B
Author's Reply. 205-208B

Electrolytic dissolution
See Anodic dissolution

Electromagnetic fields
Shape and Stability Computations of Electromagnetically Confined Liquid Metal Boundaries. 171-178B

Electromagnetism, Field effects
Electromagnetic Force Calculations for a Conical Coil. 737-748B

Electrometallurgy
Recovery of Copper From α-Etchant Solution by Electrowinning and Cementation. 192-197B

Electromotive force
See Electric potential

Electron beam melting
Synthesis of Surface Pores in a Bronze—Graphite Composite Using Electron Beam Surface Melting. 230-233A

Electron beam melting, Alloying effects
Deoxidation of Molten Titanium by Electron-Beam Remelting Technique. 599-604B

Electron beam processing
See Electron beam melting
Electron beam welding

Electron beam vacuum melting
See Electron beam melting

Electron beam welding
Microstructural Characterization of Incoloy 903 Weldments. 1169-1179A
Microstructural Formation in Longitudinal Bicrystal Welds. 1433-1446B

Electron beam welding, Alloying effects
Correction to "Beam Focusing Characteristics and Alloying Element Effects on High-Intensity Electron Beam Welding". 81-90B

Electron emission, High temperature effects
The High-Temperature Electron Emission and Vaporization of Tungsten—Osmium Alloys. 951-958A

Electron microscopy
See Scanning electron microscopy
Transmission electron microscopy

Electron mobility
Stress Corrosion Cracking of Ag—20Au in $HClO_4$, $AgClO_4$, and KCl Solutions by Surface Mobility. 425-433A
Measurement of Electronic Conduction in Cryolite Alumina Melts and Estimation of Its Effect on Current Efficiency. 729-735B

Electron spectroscopy
See Auger electron spectroscopy

Electron structure
See Electronic structure

Electronic assemblies
See Electronic devices

Electronic components
See Electronic devices

Electronic devices, Fabrication
A Model for the Thermal Properties of Liquid-Phase Sintered Composites. 1745-1752A

Electronic equipment
See Electronic devices

Electronic structure, Composition effects
Design and Development of Hot Corrosion-Resistant Nickel-Base Single Crystal Superalloys by the d-Electrons Alloy Design Theory. I. Characterization of the Phase Stability. 2443-2450A

Electronic structure, Size effects
Determination of the Total Texture Function From Individual Orientation Measurements by Electron Backscattering Pattern. 2299-2311A

Electroplating
Glue Analysis and Behavior in Copper Electrolyte. 277-287B

Electropotential
See Electric potential

Electroreduction
See Electrowinning

Electrorefining
^{197}Au Mössbauer Study of Copper Refinery Anode Slimes. 457-462B
The Electrowinning of Lithium From Chloride—Carbonate Melts. 605-615B
The Mineralogical Characterization of Tellurium in Copper Anodes. 997-1007B

Electrowinning
See also Hall Heroult process
Extraction of Zinc Chloride With Dibutyl Butylphosphonate. 11-15B
Recovery of Copper From α-Etchant Solution by Electrowinning and Cementation. 192-197B
The Electrowinning of Lithium From Chloride—Carbonate Melts. 605-615B

Elongation, Composition effects
Hydrogen Tolerance of a Ti_3Al-Based Alloy. 1095-1106A

Elongation, Deformation effects
An Investigation of Superplasticity in a Thermomechanically Processed U—2Mo (α + δ) Alloy. 369-377A
The Absence of Relative Grain Translation During Superplastic Deformation of an Al—Li—Mg—Cu—Zr Alloy. 1085-1093A
Densification and Deformation Behavior of a Porous Metal Strip During Hot Rolling. 1753-1760A

Elongation, High temperature effects
Strain-Rate Effects on High-Temperature Fracture Behavior of a 2124Al—SiC_w Composite. 1125-1131A
The Effects of Prolonged Thermal Exposure on the Fracture and Fatigue Behavior of Aluminum—Lithium Alloy 8090. 2233-2245A

Elongation, Microstructural effects
An Investigation of Superplasticity in a Thermomechanically Processed U—6Nb (α + γ_2) Alloy. 379-388A
Toughening Mechanisms in Intermetallics. (Conference Paper) 561-567A
Microstructure-Property Relationships in Low-Density Al—Li—Mg Alloys. 853-863A
Effect of Melt Cleanliness on the Properties of an Al—10 wt.% Si—10 vol.% SiC(p) Composite. 1631-1645A

Morphological Effect on the Mechanical Behavior of a Two-Phase Ti_3Al—Nb Alloy. 1785-1793A
Microstructural Study of Adiabatic Shear Band Formed by Ballistic Impact in an HY-100 Steel. 2217-2224A
Matrix Penetration of W/W Grain Boundaries and Its Effect on Mechanical Properties of 93W—5.6Ni—1.4Fe Heavy Alloy. 2411-2416A

Elongation, Pressure effects
Strain Path Change Effects in the Local Necking of Aluminum Sheet and in the Tension of Internally Pressurized Tubes. 2691-2699A

Elongation, Stress effects
Cooperative Grain-Boundary Sliding in Mechanically Alloyed IN 90211 Alloy During High Strain Rate Superplasticity. 1208-1212A
Numerical Analysis of the Hot Tension Test. 2039-2047A

Elongation, Temperature effects
Temperature-Induced Transition in Ductile Fracture Appearance of a Nitrogen-Strengthened Austenitic Stainless Steel. 2521-2529A

Embrittlement
See Hydrogen embrittlement
Liquid metal embrittlement

Emission
See Electron emission

Emissivity
See Spectral emissivity

Emulsification, Alloying effects
Interfacial Phenomena in the Reactions of Aluminum and Al—Ti Melts With KF—AlF_3 and NaF—AlF_3 Melts. 955-961B

End uses
See Prosthetics

Endothermic reactions, Temperature effects
Phase Relations in the System Cu—Gd—O and Gibbs Energy of Formation of $CuGd_2O_4$. 1655-1660A

Endurance (testing)
See Fatigue tests

Energy
See Free energy
Surface energy

Energy consumption
See Fuel consumption

Energy of activation
See Activation energy

Energy of dissociation
See Free energy
Heat of formation

Energy of formation
See Free energy
Heat of formation

Energy of fracture
See Toughness

Energy of solution
See Free energy
Heat of solution

Engine components
See also Turbine blades

Engine components, Materials selection
Residual Stresses and Their Effects on Deformation in Particle-Reinforced Metal-Matrix Composites. 2487-2496A

Engines
See Aerospace engines
Gas turbine engines
Heat engines

Enthalpy
Thermodynamics of Iron—Aluminum Alloys at 1573K. 481-486B
Numerical Simulation of Solidification of Molten Aluminum Alloys in Cylindrical Molds. 677-684B
Calorimetrically Measured Enthalpies for the Reaction of $H_2(D_2)$ (g) With Titanium and Ti—Ni Alloys at 323K. 867-873B
The Ignition and Combustion of Chalcopyrite Concentrate Particles Under Suspension-Smelting Conditions. 975-985B
Solubility and Thermodynamic Properties of Li_2O in LiF—CaF_2 Melts. 1031-1035B
Thermodynamic Properties of Zinc-Rich Zinc—Aluminum Melts. 1037-1044B
Calorimetrically Measured Enthalpies for the Reaction of H_2 (g) With Zirconium and Zirconium Alloys. 1471-1479A
The Effect of Manganese on the Activities of Iron, Nickel, and Chromium in an Fe—Ni—Cr Base Alloy. 2379-2382A
Calorimetrically Measured Enthalpies for the Reaction of Hafnium With $H(D)_2$ (g). 2623-2627A

Entropy
Thermodynamics of the Zinc—Sulfur Dioxide—Water System. 409-417B
Solubility and Thermodynamic Properties of Li_2O in LiF—CaF_2 Melts. 1031-1035B
Thermodynamic Properties of Zinc-Rich Zinc—Aluminum Melts. 1037-1044B
The Effect of Manganese on the Activities of Iron, Nickel, and Chromium in an Fe—Ni—Cr Base Alloy. 2379-2382A

Entropy of activation
See Activation energy
Entropy

Entropy of formation
See Entropy
Heat of formation

Entropy of reaction
See Entropy

Entropy of solution
See Entropy
Heat of solution

Entropy of transformation
See Entropy

Environment
See Corrosion environments
Marine environments

Equilibrium
See Chemical equilibrium

Equilibrium constants
See Chemical equilibrium

Esso Little process
See Fluidized bed reduction

Eutectic composition
Strength and Toughness of a Nb/Nb_5Si_3 Composite. 501-504A

Eutectic composition, Alloying effects
As-Cast Carbides in High-Speed Steels. 1265-1272B

Eutectic reactions, Cooling effects
A Stereological Formulation for the Source Team in Micromodels of Equiaxed Eutectic Solidification. 539-542B
The Solidification Behavior of 8090 Al—Li Alloy. 857-865B

Eutectic reactions, Heating effects
Melting of Secondary-Phase Particles in Al—Mg—Si Alloys. 2629-2641A

Eutectic temperature
Measurement of Solid Solubility of Germanium in Aluminum. 277-282A

Eutectic temperature, Alloying effects
Extent of Depression in Eutectic Temperature at Two Levels of Silicon in Al—Si—Mg Alloys Processed at Different Cooling Rates. 2810-2812A

Eutectics
See also Directionally solidified eutectics

Eutectics, Mechanical properties
Magnesium Silicide Intermetallic Alloys. 2383-2391A

Eutectoid decomposition, High temperature effects
Formation of $L1_2$-Structured Ni_3Si. 283-292A

Eutectoid reactions
See also Eutectoid decomposition

Eutectoid reactions, Environmental effects
Calorimetrically Measured Enthalpies for the Reaction of Hafnium With $H(D)_2$ (g). 2623-2627A

Exchangers (heat)
See Heat exchangers

Exchanging
See Ion exchanging

Exothermic reactions
See Carbothermic reactions

Expansion
See Thermal expansion

Explosive welding
Microstructural Modifications in an Explosively Welded Ti/Ti Clad Material. I. Bonding Interface. 735-742A
Microstructural Modifications in an Explosively Welded Ti/Ti Clad Material. II. Deformation Structures Around Bonding Interface. 743-750A
New Explosive Welding Technique to Weld Aluminum Alloy and Stainless Steel Plates Using a Stainless Steel Intermediate Plate. 2289-2297A

Extraction
See Carbon in pulp process
Cyanidation
Solvent extraction

Extractive metallurgy
See Electrometallurgy
Hydrometallurgy
Pyrometallurgy

Extrusion
See also Hot extrusion
Crystallographic Texture in Mechanically Alloyed Oxide Dispersion-Strengthened MA956 and MA957 Steels. 773-779A
Shear Rate Thickening Flow Behavior of Semisolid Slurries. 1107-1116A

Extrusion billets, Mechanical properties
An Analysis of Deformation, Temperature, and Microstructure for Hot-Extruded Titanium Alloy. 139-144B

Extrusion casting
See Pressure casting

Extrusion pressing
See Extrusion

Extrusions, Powder technology
The Roles of Rare Earth Dispersoids and Process Route on the Low Cycle Fatigue Behavior of a Rapidly Solidified Powder Metallurgy Titanium Alloy. 1761-1771A

Face centered cubic metals
See FCC metals

Failure
See Buckling
Delaminating
Fatigue failure

Failure analysis
See also Fractography
Failure Mechanisms in SiC-Fiber Reinforced 6061 Aluminum Alloy Composites Under Monotonic and Cyclic Loading. 721-734A
Service Failure of Hot-Stage Turbine Blades: the Role and Mechanisms of Oxidation Ratcheting. 2313-2319A

Fatigue (materials)
See also Fatigue life
Fatigue strength
High cycle fatigue
Low cycle fatigue
Thermal fatigue
The Stresses in a Face-Centered Cubic Single Crystal Under Uniaxial Tension. 875-881A

Fatigue (materials), Deformation effects
A Study of Subsurface Crack Initiation Produced by Rolling Contact Fatigue. 351-359A

Fatigue (materials), Environmental effects
Environmental Fatigue of an Al—Li—Cu Alloy. II. Microscopic Hydrogen Cracking Processes. 2751-2762A

Fatigue (materials), Heating effects
The Composition of the Solid Solution, Structure, and Contact Fatigue of the Case-Hardened Layer. 1163-1168A

Fatigue (materials), High temperature effects
Environmental Interactions in High-Temperature Fatigue Crack Growth of Ti-1100. 1321-1332B

Fatigue (materials), Microstructural effects
Fatigue Crack Growth Through the Lamellar Microstructure of an Alloy Based on TiAl at 25 and 800°C. 1555-1574A
Intrinsic Fatigue Crack Growth Rates for Al—Li—Cu—Mg Alloys in Vacuum. 1807-1817A

Fatigue (materials), Stress effects
Small Fatigue Crack Behavior in 7075-T651 Aluminum as Monitored With Rayleigh Wave Reflection. 1773-1783A
Microstructural Examination of Fatigue Crack Tip in High Strength Steel. 2209-2216A
A Theoretical Evaluation of Crack Closure. 2225-2232A

Fatigue cracking
See Cracking (fracturing)
Fatigue (materials)
Fatigue failure

Fatigue failure
A Transgranular Fatigue Crack Growth Model Based on Restricted Slip Reversibility. 1373-1380B

Fatigue failure, Composition effects
The Influence of Matrix Microstructure and TiC Reinforcement on the Cyclic Response and Fatigue Behavior of 2219 Aluminum. 2545-2557A

Fatigue failure, Heating effects
Mechanical Behavior of Double-Aged AA8090. 833-841A

Fatigue failure, Stress effects
Cyclic Deformation and Fracture Behavior of Aluminum Alloy 6061 Under the Action of Positive Mean Stresses. 2083-2093A

Fatigue fracture
See Fatigue failure

Fatigue life, Cooling effects
The Roles of Rare Earth Dispersoids and Process Route on the Low Cycle Fatigue Behavior of a Rapidly Solidified Powder Metallurgy Titanium Alloy. 1761-1771A

Fatigue life, Deformation effects
An Assessment of Cold Work Effects on Strain-Controlled Low-Cycle Fatigue Behavior of Type 304 Stainless Steel. 913-924A

Fatigue life, Microstructural effects
Effects of Processing on the Transverse Fatigue Properties of Low-Sulfur AISI 4140 Steel. 2701-2708A

Fatigue life, Stress effects
Periodic Oxide Cracking on Fe2.25Cr1Mo Produced by High-Temperature Fatigue Tests With a Compression Hold. 327-333A
Cyclic Deformation and Fracture Behavior of Aluminum Alloy 6061 Under the Action of Positive Mean Stresses. 2083-2093A

Fatigue properties
See Fatigue (materials)

Fatigue strength, Composition effects
Strength, Fracture, and Fatigue Behavior of Advanced High-Temperature Intermetallics Reinforced With Ductile Phases. (Conference Paper) 585-600A

Fatigue strength, Cooling effects
The Roles of Rare Earth Dispersoids and Process Route on the Low Cycle Fatigue Behavior of a Rapidly Solidified Powder Metallurgy Titanium Alloy. 1761-1771A

Fatigue strength, Microstructural effects
On the Nature and Crystallographic Orientation of Subsurface Cracks in High Cycle Fatigue of Ti—6Al—4V. 669-680A
Effects of Processing on the Transverse Fatigue Properties of Low-Sulfur AISI 4140 Steel. 2701-2708A

Fatigue strength, Stress effects
The Growth of Small Fatigue Cracks in A286 Steel. 689-700A
Failure Mechanisms in SiC-Fiber Reinforced 6061 Aluminum Alloy Composites Under Monotonic and Cyclic Loading. 721-734A
Fatigue and Creep—Fatigue Damage of Austenitic Stainless Steels Under Multiaxial Loading. 2247-2261A

Fatigue tests
Periodic Oxide Cracking on Fe2.25Cr1Mo Produced by High-Temperature Fatigue Tests With a Compression Hold. 327-333A
The Growth of Small Fatigue Cracks in A286 Steel. 689-700A
The Roles of Rare Earth Dispersoids and Process Route on the Low Cycle Fatigue Behavior of a Rapidly Solidified Powder Metallurgy Titanium Alloy. 1761-1771A

FCC metals, Mechanical properties
Large Deformation Simple Compression of a Copper Single Crystal. 989-992A

Ferric compounds
See Iron compounds

Ferrite, Alloying effects
The Effect of Manganese on the Activities of Iron, Nickel, and Chromium in an Fe—Ni—Cr Base Alloy. 2379-2382A

Ferrite, Heating effects
Orientation Relationships Between M_2C Carbide and the Austenite Matrix in an Fe—Mn—Al—Mo—C Alloy. 1057-1065A
Phase Transformations in an Fe—7.8Al—29.5Mn—1.5Si—1.05C Alloy. 1957-1963A

Ferritic stainless steels, Mechanical properties
Scaling Laws for Fatigue Crack Growth of Large Cracks in Steels. 2473-2486A

Ferritic stainless steels, Microstructure
Crystallographic Texture in Mechanically Alloyed Oxide Dispersion-Strengthened MA956 and MA957 Steels. 773-779A

Ferroalloys
See Ferrochromium
Ferronickel

Ferrochromium, Steel making
The Reduction Mechanism of Chromite in the Presence of a Silica Flux. 987-995B

Ferronickel
Gaseous Reduction of Laterite Ores. 271-295B

Ferrous alloys
See also Cast iron
Steels

Ferrous alloys, Corrosion
Environmentally Assisted Cracking of Two-Phase Iron—Manganese—Aluminum Alloys in NaCl Solution. 459-464A

Ferrous alloys, Heat treatment
The Microstructure of Discontinuously Precipitated Lamellae in an Austenitic Fe—42.4 wt.% Ni—4.15 wt.% Al—0.45 wt.% C Alloy. 1039-1047A
Microstructure and Hydrogen Effects on Fracture in the Alloy A-286. 1983-1991A

Ferrous alloys, Mechanical properties
A Dislocation Shielding Prediction of the Toughness Transition During Cleavage of Semibrittle Crystals. (Conference Paper) 535-543A

Ferrous alloys, Metallography
Orientation Imaging: the Emergence of a New Microscopy. 819-831A

Ferrous alloys, Microstructure
High Nitrogen Concentration in Fe—Cr—Ni Alloys. 73-82A
Microstructural Characterization and *In Situ* Transmission Electron Microscopy Analysis of Laser-Processed and Thermally Treated Fe—Cr—W—C Clad Coatings. 1621-1629A
Determination of the Total Texture Function From Individual Orientation Measurements by Electron Backscattering Pattern. 2299-2311A

Ferrous alloys, Phase transformations
A New Model for Diffusional Growth With Nonequilibrium Interface Conditions. 1507-1516A

Ferrous alloys, Phases (state of matter)
Structure and Decomposition of A13-Type Phase in Rapidly Solidified High-Carbon Cr—Si Iron Alloy. 751-756A

Ferrous alloys, Physical properties
The Density of Liquid Iron—Carbon Alloys. 5-10B

Ferrous alloys, Welding
Keyhole Formation. 875-880B
Microstructural Formation in Longitudinal Bicrystal Welds. 1433-1446B

Ferrous compounds
See Iron compounds

Ferrous metals
See Ferrous alloys

Fiber composites, Casting
A Structural Study of Oxidation in a Zirconia-Toughened Alumina Fiber-Reinforced Fe_3Al Composite. 435-443A
Interfacial Shear Strength of Cast and Directionally Solidified NiAl—Sapphire Fiber Composites. 2119-2125A

Fiber composites, Mechanical properties
Preliminary Evaluation of Tensile and Stress—Rupture Behavior of Tungsten + 24 at.% Rhenium + 0.4 at.% HfC Wire. 209-214A
Toughening Mechanisms in Intermetallics. (Conference Paper) 561-567A
The Mechanical Behavior of Directionally Solidified Al—Ni in Compression. 713-719A
Failure Mechanisms in SiC-Fiber Reinforced 6061 Aluminum Alloy Composites Under Monotonic and Cyclic Loading. 721-734A
Residual Strain Gradient Determination in Metal Matrix Composites by Synchrotron X-Ray Energy Dispersive Diffraction. 1117-1124A
Failure Diagrams for Unidirectional Fiber Metal-Matrix Composites. 1531-1542A
Correction to "Failure Diagrams for Unidirectional Fiber Metal-Matrix Composites". 1531-1542A

Evolution of Damage and Plasticity in Titanium-Based, Fiber-Reinforced Composites. 1597-1610A
Creep Regimes for Directionally Solidified Al—Al_3Ni Eutectic Composite. 2721-2730A

Fiber composites, Powder technology
Synthesis of Surface Pores in a Bronze—Graphite Composite Using Electron Beam Surface Melting. 230-233A

Fiber composites, Synthesis
Reactions During Infiltration of Graphite Fibers by Molten Al—Ti Alloy. 2577-2583A
Numerical Simulation of the Infiltration of Fibrous Preforms by a Pure Metal. 2667-2678A

Fiber composites, Thermal properties
Thermal Conductivity and Thermal Expansion of Graphite Fiber-Reinforced Copper Matrix Composites. (Conference Paper) 43-52A
Reaction Layer Formation at the Graphite/Copper—Chromium Alloy Interface. (Conference Paper) 53-60A

Fiber orientation
Thermal Conductivity and Thermal Expansion of Graphite Fiber-Reinforced Copper Matrix Composites. (Conference Paper) 43-52A
The Mechanical Behavior of Directionally Solidified Al—Ni in Compression. 713-719A

Field ion microscopy
Phase Chemistry and Precipitation Reactions in Maraging Steels. I. Introduction and Study of Cobalt-Containing C-300 Steel. 1221-1239B

Fields (physics)
See Electromagnetic fields
Magnetic fields

Finite element method
Deformation-Induced Residual Stress Changes in SiC Whisker-Reinforced 6061 Aluminum Composites. 187-196A
Stress Distribution in Particulate-Reinforced Metal-Matrix Composites Subjected to External Load. 197-207A
A Study of Subsurface Crack Initiation Produced by Rolling Contact Fatigue. 351-359A
A Finite Element Modeling Analysis of Flow and Mass Transfer Through Nonspherical Bubbles in a Copper Converter. 617-627B
Mathematical Model of Phase Transformations and Elasto—Plastic Stress in the Water Spray Quenching of Steel Bars. 795-808A
The Stresses in a Face-Centered Cubic Single Crystal Under Uniaxial Tension. 875-881A
Determination of Interfacial Heat Transfer Coefficients in Casting and Quenching Using a Solution Technique for Inverse Problems Based on the Boundary Element Method. 1077-1086B
A Better Sheet Formability Test. 1143-1151A
Critical Assessment of the Local Cleavage Stress σ_f^* in Notch Specimens of C—Mn Steel. 1381-1389B
Influence of Thermally Induced Plasticity on the Bauschinger Effect of SiC/Al Composites. 1879-1882A
Numerical Analysis of the Hot Tension Test. 2039-2047A
Residual Stresses and Their Effects on Deformation in Particle-Reinforced Metal-Matrix Composites. 2487-2496A

Finsider process
See Direct reduction

Flame reduction process
See Direct reduction

Flammability
A Real-Time Gravimetric Instrument for Combustion Studies of Metallic Materials. 395-397B

Flash smelting
The Ignition and Combustion of Chalcopyrite Concentrate Particles Under Suspension-Smelting Conditions. 975-985B

Flexural vibration
See Fatigue (materials)

Flow
See Fluid flow
Plastic flow

Flow stress
See Yield strength

Fluid bed reduction
See Fluidized bed reduction

Fluid dynamics
See Hydrodynamics

Fluid flow
See also Gas flow
Inclusion Behavior and Heat-Transfer Phenomena in Steelmaking Tundish Operations. I. Aqueous Modeling. 755-765B
Inclusion Behavior and Heat-Transfer Phenomena in Steelmaking Tundish Operations. II. Mathematical Model for Liquid Steel in Tundishes. 767-777B
Determination of Interfacial Heat Transfer Coefficients in Casting and Quenching Using a Solution Technique for Inverse Problems Based on the Boundary Element Method. 1077-1086B

Fluid flow, High temperature effects
Measurement of Velocity in High-Temperature Liquid Metals. 1009-1022B

Fluid form deep drawing
See Deep drawing

Fluid mold casting
See Centrifugal casting

Fluidity
See Viscosity

Fluidized bed furnaces
Decreased Gas Consumption of a Fluidized Bed Furnace. 889-897B

Fluidized bed reduction
Reduction of Iron Ore Fines by Coal Fines in a Packed Bed and Fluidized Bed Apparatus—a Comparative Study. 511-520B

Fluids
See Gases

Force
See Loads (forces)

Forging
See Die forging
Hot forging
Press forging

Forgings, Powder technology
The Roles of Rare Earth Dispersoids and Process Route on the Low Cycle Fatigue Behavior of a Rapidly Solidified Powder Metallurgy Titanium Alloy. 1761-1771A

Forgings, Structural hardening
Auger Electron Spectroscopy Study of Grain Boundary Segregation in Alloy K-500. I. Behavior in As-Processed State. 1897-1907A

Formability
A Better Sheet Formability Test. 1143-1151A
Calculations of Forming Limit Diagrams for Changing Strain Paths. 2497-2501A
Effect of Changing Strain Paths on Forming Limit Diagrams of Aluminum 2008-T4. 2503-2512A

Formability, Microstructural effects
Toughening Mechanisms in Intermetallics. (Conference Paper) 561-567A

Formability, Pressure effects
Strain Path Change Effects in the Local Necking of Aluminum Sheet and in the Tension of Internally Pressurized Tubes. 2691-2699A

Formation entropy
See Entropy
Heat of formation

Forming
See also Drawing
Extrusion
Punching
Roll forming
Stretching
Superplastic forming
Calculations of Forming Limit Diagrams for Changing Strain Paths. 2497-2501A

Forming limit
See Formability

Forms (molds)
See Molds

Foundry practice
Solidification of Pure Metal in Imperfect Contact With a Mold. 542-544B
A Model for the Graphite Formation in Ductile Cast Iron. I. Inoculation Mechanisms. 2321-2345A
Electrical Conductivity and Microstructure of Aluminum Alloys. 2355-2358A
Extent of Depression in Eutectic Temperature at Two Levels of Silicon in Al—Si—Mg Alloys Processed at Different Cooling Rates. 2810-2812A

Foundry practice, Quality control
The Reduced Pressure Test as a Measuring Tool in the Evaluation of Porosity/Hydrogen Content in Al—7 wt.% Si—10 vol.% SiC(p) Metal Matrix Composite. 1857-1868A

Fractography
Fracture Morphology of NiAl Single Crystals Tested in Tension. 1363-1371B

Fracture mechanics
See also Crack opening displacement
Effects of Hydrogen on Mechanical Properties and Fracture Mechanism of 8090 Al—Li alloy. 1355-1361B

Fracture mechanisms
See Fracture mechanics

Fracture strength, Alloying effects
Effect of Ti/Al Ratio and Chromium, Niobium, and Hafnium Additions on Material Factors and Mechanical Properties in TiAl. 141-150A

Fracture strength, Composition effects
Strength, Fracture, and Fatigue Behavior of Advanced High-Temperature Intermetallics Reinforced With Ductile Phases. (Conference Paper) 585-600A

Fracture strength, Heating effects
The Effect of Annealing on the Microstructure and Mechanical Properties of Cu—X Microcomposites. (Conference Paper) 27-34A

Fracture strength, Microstructural effects
Micromechanisms of Brittle Fracture. (Conference Paper) 523-534A
Further Investigation of Critical Events in Cleavage Fracture of C—Mn Base and Weld Steel. 659-667A
Morphological Effect on the Mechanical Behavior of a Two-Phase Ti_3Al—Nb Alloy. 1785-1793A

Fracture strength, Pressure effects
The Effects of Superimposed Hydrostatic Pressure on Deformation and Fracture. I. Monolithic 6061 Aluminum. (Conference Paper) 601-608A
The Effect of Superimposed Hydrostatic Pressure on Deformation and Fracture. II. Particulate-Reinforced 6061 Composites. (Conference Paper) 609-615A

Fracture toughness
Adiabatic Shear Band Formation in Al—SiC_w Composites. 895-900A
Dynamic Fracture Initiation Behavior of an HY-100 Steel. 901-912A

Fracture toughness, Alloying effects
Martensite Morphology and Fracture Behavior in Intercritically Treated Medium-Carbon 2Si—6N Steel. 508-511A

Fracture toughness, Composition effects
On the Flow Behavior of Constrained Ductile Phases. 403-415A
Strength and Toughness of a Nb/Nb_5Si_3 Composite. 501-504A
Hydrogen Tolerance of a Ti_3Al-Based Alloy. 1095-1106A

Fracture toughness, Deformation effects
A Better Sheet Formability Test. 1143-1151A
Particulate Fracture During Deformation of a Spray Formed Metal-Matrix Composite. 1575-1588A

Fracture toughness, Heating effects
The Effect of the Precipitation of Coherent and Incoherent Precipitates on the Ductility and Toughness of High-Strength Steel. 127-139A
Mechanical Behavior of Double-Aged AA8090. 833-841A
Transmission Electron Microscopy Examination of Hardening and Toughening Phenomena in Aermet 100. 1943-1955A

Fracture toughness, High temperature effects
The Effects of Prolonged Thermal Exposure on the Fracture and Fatigue Behavior of Aluminum—Lithium Alloy 8090. 2233-2245A

Fracture toughness, Microstructural effects
The Role of Inclusion and Pore Content on the Fracture Toughness of Powder-Processed Blended Elemental Titanium Alloys. 161-174A
A Dislocation Shielding Model for the Fracture of Semibrittle Polycrystals. 343-350A
A Dislocation Shielding Prediction of the Toughness Transition During Cleavage of Semibrittle Crystals. (Conference Paper) 535-543A
Toughening Mechanisms in Intermetallics. (Conference Paper) 561-567A
Toughening Mechanisms in Titanium Aluminides. (Conference Paper) 569-583A
Microstructure and Mechanical Properties of Dispersion-Strengthened High-Temperature Al—8.5Fe—1.2V—1.7Si Alloys Produced by Atomized Melt Dispersion Process. 865-873A
Microstructural Toughening Mechanisms in γ-TiAl · 20% TiCb as Determined by FRASTA. 883-894A

Fracture toughness, Stress effects
Rate and Environmental Effects on Fracture of a Two-Phase TiAl-Alloy. 113-125A
Failure Mechanisms in SiC-Fiber Reinforced 6061 Aluminum Alloy Composites Under Monotonic and Cyclic Loading. 721-734A
Failure Diagrams for Unidirectional Fiber Metal-Matrix Composites. 1531-1542A
Correction to "Failure Diagrams for Unidirectional Fiber Metal-Matrix Composites". 1531-1542A

Fracture toughness, Temperature effects
Surface Preparation and Bend Ductility of NiAl. 2593-2596A

Fracture toughness, Welding effects
Fracture Toughness Analysis of Heat-Affected Zones in High-Strength Low-Alloy Steel Welds. 1133-1141A

Fracturing
See Brittle fracture
Cracking (fracturing)
Ductile fracture
Intergranular fracture
Transgranular fracture

Free energy
See also Activation energy
Stacking fault energy
Quantitative Method for Silica Flux Evaluation. 63-73B
Thermodynamics of Nitrogen in BaO—TiO_x Melts. 131-138B
The Glass—Liquid and Solid—Jelly Transition Temperatures. 309-315B
Thermodynamics of the Zinc—Sulfur Dioxide—Water System. 409-417B
Determination of Standard Gibbs Energies of Formation of MgO, SrO, and BaO. 487-492B
A Thermodynamic Evaluation of the Fe—Mn—N System. 629-645A
Critical Evaluation and Optimization of the Thermodynamic Properties and Phase Diagrams of the MnO—TiO_2, MgO—TiO_2, FeO—TiO_2, Ti_2O_3—TiO_2, Na_2O—TiO_2, and K_2O—TiO_2 Systems. 795-805B
Critical Evaluation and Optimization of the Thermodynamic Properties and Phase Diagrams of the CaO—Al_2O_3, Al_2O_3—SiO_2, CaO—Al_2O_3—SiO_2 Systems. 807-816B
Oxygen and Sulfur Solubilities in Ni—Fe—S—O Melts. 847-856B
Determination of Standard Gibbs Energy of Formation of Ca_3N_2. 907-909B
A Thermodynamic Evaluation of the Fe—Cr—Mn—C System. 1017-1025A
Solubility and Thermodynamic Properties of Li_2O in LiF—CaF_2 Melts. 1031-1035B
Thermodynamics of Si—C—O System. 1212-1214A
Phase Relations in the System Cu—Gd—O and Gibbs Energy of Formation of $CuGd_2O_4$. 1655-1660A
A Thermodynamic Evaluation of the Cr—Mn and Fe—Cr—Mn Systems. 1919-1933A
Thermodynamic Analysis and Evaluation of the Fe—Cr—Mn—N System. 2393-2409A

Free energy of activation
See Activation energy

Free energy of dissociation
See Free energy
Heat of formation

Free energy of formation
See Free energy
Heat of formation

Free energy of reaction
See Free energy

Free energy of solution
See Free energy
Heat of solution

Free energy of transformation
See Free energy

Freezing
Evolution of Porosity in Long Freezing Range Alloys. 365-377B

Freezing points
See Melting points

Friction
See Internal friction
Sliding friction

Fuel consumption
Decreased Gas Consumption of a Fluidized Bed Furnace. 889-897B

Furnaces
See Coal fired furnaces
Coke fired furnaces
Fluidized bed furnaces
Ladle furnaces

Fused salt electrolysis
See Hall Heroult process

Fusion (melting)
See Melting

Fusion welding
See also Electron beam welding
Laser beam welding
Effect of Activity Differences on Hydrogen Migration in Dissimilar Titanium Alloy Welds. 2763-2771A

Gadolinium, Ternary systems
Phase Relations in the System Cu—Gd—O and Gibbs Energy of Formation of $CuGd_2O_4$. 1655-1660A

Galvanic cells
See Electrolytic cells

Galvanized steels, Metal working
A Better Sheet Formability Test. 1143-1151A

Galvanizing, Alloying effects
Thermodynamic Properties of Zinc-Rich Zinc—Aluminum Melts. 1037-1044B

Galvannealing
See Annealing

Galvanomagnetic effect
See Electromagnetism

Galvanomagnetism
See Electromagnetism

Gamma ray spectroscopy
See Mossbauer spectroscopy

Gas
See Gases

Gas flow
Measurement and Modeling of Turbulence in the Gas/Liquid Two-Phase Zone During Gas Injection. 695-705B

Gas permeability
See Permeability

Gas phases
How Fast Can We Go? The Status of our Knowledge of the Rates of Gas—Liquid Metal Reactions. 241-258B
Measurement and Modeling of Turbulence in the Gas/Liquid Two-Phase Zone During Gas Injection. 695-705B
Calculation of Sulfide Capacities of Multicomponent Slags. 817-825B
Thermodynamics of Si—C—O System. 1212-1214A
On the Anchoring of Solids at Curved Fluid Interfaces. 1673-1677A
Correction to "On the Anchoring of Solids at Curved Fluid Interfaces". 1673-1677A

Gas tungsten arc welding
Correction to "Computational Modeling of Stationary Gas-Tungsten-Arc Weld Pools and Comparison to Stainless Steel 304 Experimental Results". 399B

Gas turbine engines, Materials selection
The Role of Microstructure on Strength and Ductility of Hot-Extruded Mechanically Alloyed NiAl. 1993-2000A
Interfacial Shear Strength of Cast and Directionally Solidified NiAl—Sapphire Fiber Composites. 2119-2125A

Gas turbines
See Gas turbine engines

Gases
General Model of a Gas Transport Through Solid Porous Membranes. 1527-1530A

Germanium, Alloying elements
Measurement of Solid Solubility of Germanium in Aluminum. 277-282A

Gibbs free energy
See Free energy

Glass transition temperature
The Glass—Liquid and Solid—Jelly Transition Temperatures. 309-315B

Glue
Glue Analysis and Behavior in Copper Electrolyte. 277-287B

Gold, Extraction
An Evaluation of the Physicochemical Degradation of Gold Ion-Exchange Resins in Hypochlorite Solutions. 17-25B
Reaction Mechanism of Gold Dissolution With Bromine. 419-431B
The Reversibility of Adsorption of Gold Cyanide on Activated Carbon. 433-440B
Kinetics of the Dissolution of Pure Silver and Silver—Gold Alloys in Nitric Acid Solution. 827-837B
A Mathematical Model for Heap Leaching of One or More Solid Reactants From Porous Ore Pellets. 1087-1102B

Gold, Reduction (chemical)
The Mineralogical Characterization of Tellurium in Copper Anodes. 997-1007B

Gold, Refining
^{197}Au Mössbauer Study of Copper Refinery Anode Slimes. 457-462B

Gold, Ternary systems
Thermochemistry of Binary and Ternary Noble Metal Alloys: the Systems Cu—Ce, Ag—Ce, Au—Ce, Cu—Ag—Au, and Ce—Ag—Au. 1827-1834A

Gradients
See Temperature gradient

Graef rotor furnaces
See Oxygen blown converters

Grain boundaries
The Mineralogical Characterization of Tellurium in Copper Anodes. 997-1007B
How Are New Orientations Generated During Primary Recrystallization?en 1001-1015A
A Stereological Model of the Degree of Grain Boundary-Pore Contact During Sintering. 1497-1505A
Evolution of Damage and Plasticity in Titanium-Based, Fiber-Reinforced Composites. 1597-1610A
Auger Electron Spectroscopy Study of Grain Boundary Segregation in Alloy K-500. I. Behavior in As-Processed State. 1897-1907A
Matrix Penetration of W/W Grain Boundaries and Its Effect on Mechanical Properties of 93W—5.6Ni—1.4Fe Heavy Alloy. 2411-2416A
Effects of Heat Treatment and Reinforcement Size on Reinforcement Fracture During Tension Testing of a SiC_p Discontinuously Reinforced Aluminum Alloy. 2531-2543A

Grain boundaries, Alloying effects
Martensite Morphology and Fracture Behavior in Intercritically Treated Medium-Carbon 2Si—6N Steel. 508-511A

Grain boundaries, Environmental effects
Environmental Fatigue of an Al—Li—Cu Alloy. II. Microscopic Hydrogen Cracking Processes. 2751-2762A

Grain boundaries, Heating effects
Auger Electron Spectroscopy Study of Grain Boundary Segregation in Alloy K-500. II. Behavior in Slow Strain Rate Tensile Test. 1909-1917A
Phase Transformations in an Fe—7.8Al—29.5Mn—1.5Si—1.05C Alloy. 1957-1963A
Microstructure and Hydrogen Effects on Fracture in the Alloy A-286. 1983-1991A
Kinetics of Grain Growth in the Weld Heat-Affected Zone of Alloy 718. 2773-2785A

Grain boundaries, Welding effects
Microstructural Characterization of Incoloy 903 Weldments. 1169-1179A

Grain boundary migration
Hydrogen Diffusion and Its Relevance to Intergranular Cracking in Nickel. 105-112A
A Transmission Electron Microscopy Study of Copper Precipitation in the Cementite Phase of Hypereutectoid Alloy Steels. 781-793A

Grain boundary sliding, Deformation effects
Cavity Distribution Pattern in a Superplastically Deformed Aluminum Alloy. 417-424A

Grain boundary sliding, Stress effects
Cooperative Grain-Boundary Sliding in Mechanically Alloyed IN 90211 Alloy During High Strain Rate Superplasticity. 1208-1212A

Grain growth
How Are New Orientations Generated During Primary Recrystallization?en 225-239B

Grain growth, Heating effects
Grain Growth of a Superplastic 7475 Aluminum Alloy. 493-495A

Grain orientation
Atomic Mechanisms of Diffusional Nucleation and Growth and Comparisons With Their Counterparts in Shear Transformations. 241-276A
Three-Dimensional Probabilistic Simulation of Solidification Grain Structures: Application to Superalloy Precision Castings. 467-479A
On the Nature and Crystallographic Orientation of Subsurface Cracks in High Cycle Fatigue of Ti—6Al—4V. 669-680A
How Are New Orientations Generated During Primary Recrystallization?en 1001-1015A

Grain refinement, Cooling effects
Mechanisms of Porosity Formation During Solidification: a Theoretical Analysis. 349-364B
Study of the Mechanism of Grain Refinement of Aluminum After Additions of Titanium- and Boron-Containing Master Alloys. 481-491A
Interfacial Phenomena in the Reactions of Al—B, Al—Ti—B, and Al—Zr—B Alloys With KF—AlF_3 and NaF—AlF_3 Melts. 947-953B

Grain size
A Dislocation Shielding Model for the Fracture of Semibrittle Polycrystals. 343-350A
Micromechanisms of Brittle Fracture. (Conference Paper) 523-534A
Toughening Mechanisms in Intermetallics. (Conference Paper) 561-567A
Further Investigation of Critical Events in Cleavage Fracture of C—Mn Base and Weld Steel. 659-667A
Microstructure and Mechanical Properties of Dispersion-Strengthened High-Temperature Al—8.5Fe—1.2V—1.7Si Alloys Produced by Atomized Melt Dispersion Process. 865-873A
The Combined Effect of Grain Size and Strain Rate on the Dislocation Substructures and Mechanical Properties in Pure Aluminum. 1153-1161A
A Stereological Model of the Degree of Grain Boundary-Pore Contact During Sintering. 1497-1505A
Characterization of Room-Temperature Damping in Aluminum—Indium Alloys. 1611-1619A
The Effect of Grain Size and Strain Rate On the Substructures and Mechanical Properties in Nickel 200. 2559-2568A

Grain size, Alloying effects
Effect of Ti/Al Ratio and Chromium, Niobium, and Hafnium Additions on Material Factors and Mechanical Properties in TiAl. 141-150A

Grain size, Deformation effects
Model-Based Feedback Control of Deformation Processing With Microstructure Goals. 289-300B
An Investigation of Superplasticity in a Thermomechanically Processed U—2Mo ($\alpha + \delta$) Alloy. 369-377A
An Investigation of Superplasticity in a Thermomechanically Processed U—6Nb ($\alpha + \gamma_2$) Alloy. 379-388A
The Role of Microstructure on Strength and Ductility of Hot-Extruded Mechanically Alloyed NiAl. 1993-2000A
Microstructural Evolution in Nickel During Rolling From Intermediate to Large Strains. 2021-2037A
Computer Simulation of the Forging of Fine Grain IN-718 Alloy. 2061-2071A

Grain size, Heating effects
The Microstructural Evolution, Crystallography, and Thermal Processing of Ultrahigh Carbon Fe—1.85% C Melt-Spun Ribbon. 809-818A
Elastic Limit and Microplastic Response of Hardened Steels. 2263-2277A
A Study of the Improvement of Superplasticity of 7075 Alloy. 2596-2598A

Grain size, Stress effects
The Growth of Small Fatigue Cracks in A286 Steel. 689-700A
Residual Strain Gradient Determination in Metal Matrix Composites by Synchrotron X-Ray Energy Dispersive Diffraction. 1117-1124A
Cooperative Grain-Boundary Sliding in Mechanically Alloyed IN 90211 Alloy During High Strain Rate Superplasticity. 1208-1212A

Grain size, Welding effects
Microstructural Modifications in an Explosively Welded Ti/Ti Clad Material. II. Deformation Structures Around Bonding Interface. 743-750A

Grain structure
See also Dendritic structure
The Role of Mobile Dislocations in the Nucleation of Brittle Fracture. (Conference Paper) 545-552A
Toughening Mechanisms in Titanium Aluminides. (Conference Paper) 569-583A
On the Nature and Crystallographic Orientation of Subsurface Cracks in High Cycle Fatigue of Ti—6Al—4V. 669-680A
Use of X-Ray Diffraction in a Study of Ammonia Leaching of Multimetal Sulfides. 937-945B
Electrical Conductivity in Directionally Solidified Pb—9Cu and Pb—20Cu Alloys. 975-979A
How Are New Orientations Generated During Primary Recrystallization?en 1001-1015A
A Stereological Model of the Degree of Grain Boundary-Pore Contact During Sintering. 1497-1505A
Microstructural Study of Adiabatic Shear Band Formed by Ballistic Impact in an HY-100 Steel. 2217-2224A
Matrix Penetration of W/W Grain Boundaries and Its Effect on Mechanical Properties of 93W—5.6Ni—1.4Fe Heavy Alloy. 2411-2416A
The Influence of Matrix Microstructure and TiC Reinforcement on the Cyclic Response and Fatigue Behavior of 2219 Aluminum. 2545-2557A

Grain structure, Alloying effects
Interfacial Phenomena in the Reactions of Aluminum and Al—Ti Melts With KF—AlF_3 and NaF—AlF_3 Melts. 955-961B
A Model for the Thermal Properties of Liquid-Phase Sintered Composites. 1745-1752A
The Effect of Trace-Titanium Content on the Solubility of Niobium and the Consequent Properties of Niobium-Bearing Steels. 2127-2130A

Grain structure, Composition effects
Nonuniform Recrystallization in a Mechanically Alloyed Nickel-Base Superalloy. 1049-1055A
Potassium Bubbles in Tungsten Wire. 1073-1084A

Grain structure, Cooling effects
Three-Dimensional Probabilistic Simulation of Solidification Grain Structures: Application to Superalloy Precision Castings. 467-479A
A Stereological Formulation for the Source Team in Micromodels of Equiaxed Eutectic Solidification. 539-542B
Interfacial Phenomena in the Reactions of Al—B, Al—Ti—B, and Al—Zr—B Alloys With KF—AlF_3 and NaF—AlF_3 Melts. 947-953B
The Roles of Rare Earth Dispersoids and Process Route on the Low Cycle Fatigue Behavior of a Rapidly Solidified Powder Metallurgy Titanium Alloy. 1761-1771A
Electrical Conductivity and Microstructure of Aluminum Alloys. 2355-2358A

Improved Model to Predict Properties of Aluminum Alloy Products After Continuous Cooling. 2417-2427A

Grain structure, Deformation effects
Elaboration of Metal Matrix Composites From Thixotropic Alloy Slurries Using a New Magnetohydrodynamic Caster. 493-510B
Calculation of Dendrite Settling Velocities Using a Porous Envelope. 749-753B
The Absence of Relative Grain Translation During Superplastic Deformation of an Al—Li—Mg—Cu—Zr Alloy. 1085-1093A
Interfacial Shear Strength of Cast and Directionally Solidified NiAl—Sapphire Fiber Composites. 2119-2125A

Grain structure, Heating effects
Grain Growth of a Superplastic 7475 Aluminum Alloy. 493-495A
The Microstructural Evolution, Crystallography, and Thermal Processing of Ultrahigh Carbon Fe—1.85% C Melt-Spun Ribbon. 809-818A
The Microstructure of Discontinuously Precipitated Lamellae in an Austenitic Fe—42.4 wt.% Ni—4.15 wt.% Al—0.45 wt.% C Alloy. 1039-1047A
Surface Hardening of Ti—6Al—4V Alloy by Electrochemical Hydrogenation. 1181-1185A
Homogenization of Near-Gamma Titanium Aluminides: Analysis of Kinetics and Process Scaleup Feasibility. 1295-1306B
The Dendritic Growth of γ' Precipitates and Grain Boundary Serration in a Model Nickel-Base Superalloy. 1733-1743A
Microstructure and Hydrogen Effects on Fracture in the Alloy A-286. 1983-1991A
Kinetics of Grain Growth in the Weld Heat-Affected Zone of Alloy 718. 2773-2785A

Grain structure, High temperature effects
Influence of Long-Term Aging and Superimposed Creep Stress on the Microstructure of 2.25Cr—1Mo Steel. 315-326A

Grain structure, Stress effects
Preliminary Evaluation of Tensile and Stress—Rupture Behavior of Tungsten + 24 at.% Rhenium + 0.4 at.% HfC Wire. 209-214A
Stress-Corrosion Cracking in Equiaxed 7075 Aluminum Under Tension and Torsion Loading. 2569-2575A

Grain structure, Temperature effects
Simulation of Metal Solidification Using a Cellular Automaton. 1045-1053B
Computer Simulation of VC Precipitation at Moving γ/α Interfaces. 2195-2207A

Grain structure, Welding effects
Microstructural Modifications in an Explosively Welded Ti/Ti Clad Material. I. Bonding Interface. 735-742A
Fracture Toughness Analysis of Heat-Affected Zones in High-Strength Low-Alloy Steel Welds. 1133-1141A

Graphite, Composite materials
Thermal Conductivity and Thermal Expansion of Graphite Fiber-Reinforced Copper Matrix Composites. (Conference Paper) 43-52A
Reaction Layer Formation at the Graphite/Copper—Chromium Alloy Interface. (Conference Paper) 53-60A
Tribological Characteristics of Aluminum—50 Vol.% Graphite Composite. 151-159A
Synthesis of Surface Pores in a Bronze—Graphite Composite Using Electron Beam Surface Melting. 230-233A
Damping Behavior of 6061Al/Gr Metal Matrix Composites. 701-712A
Reactions During Infiltration of Graphite Fibers by Molten Al—Ti Alloy. 2577-2583A

Graphitic structure
See also Nodular graphitic structure

Graphitic structure, Cooling effects
A Model for the Graphite Formation in Ductile Cast Iron. I. Inoculation Mechanisms. 2321-2345A

Graphitic structure, Temperature effects
Mechanism of TiC Formation in Al/TiC In Situ Metal-Matrix Composites. 2803-2805A

Graphitization
Penetration and Chemical Reactions in Carbon Cathodes During Aluminum Electrolysis. I. Laboratory Experiments. 75-89B

Gravimetric analysis
See Thermogravimetric analysis

Gravitation
The Detection of Solutal Convection During Electrochemical Measurement of the Oxygen Diffusivity in Liquid Tin. 91-100B
Interdendritic Eutectic Solidification of an AlSi-7.0 Alloy Under Microgravity. 208-212B
Thermosolutal Convection and Macrosegregation Caused by Solute Rejection at Cell/Dendrite Tips. 1661-1669A

Gravity
See Gravitation

Gravity die casting
See Permanent mold casting

Gray cast iron
See Gray iron

Gray iron
See also Nodular iron

Gray iron, Mechanical properties
Characterization of Room-Temperature Damping in Aluminum—Indium Alloys. 1611-1619A

Grey iron
See Gray iron

Growth
See Crystal growth
Grain growth

GTAW
See Gas tungsten arc welding

Hafnium, Alloying elements
Effect of Ti/Al Ratio and Chromium, Niobium, and Hafnium Additions on Material Factors and Mechanical Properties in TiAl. 141-150A

Hafnium, Phases (state of matter)
Calorimetrically Measured Enthalpies for the Reaction of Hafnium With $H(D)_2$ (g). 2623-2627A

Halides
See Chlorides

Hall Heroult process
Measurement of Electronic Conduction in Cryolite Alumina Melts and Estimation of Its Effect on Current Efficiency. 729-735B
Stability of Metal/Electrolyte Interface in Hall—Héroult Cells: Effect of the Steady Velocity. 899-906B

Hall Heroult process, Environmental effects
Penetration and Chemical Reactions in Carbon Cathodes During Aluminum Electrolysis. I. Laboratory Experiments. 75-89B

Hardening
See Surface hardening

Hardness
See also Diamond pyramid hardness
Microhardness
Rockwell hardness
Surface hardness

Hardness, Alloying effects
Microstructure and Mechanical Behavior of Al—Li—Cu—Mg Alloy 8090 Microalloyed With Vanadium and Beryllium. 95-104A
Martensite Morphology and Fracture Behavior in Intercritically Treated Medium-Carbon 2Si—6N Steel. 508-511A
The Effect of Trace-Titanium Content on the Solubility of Niobium and the Consequent Properties of Niobium-Bearing Steels. 2127-2130A

Hardness, Heating effects
The Effect of the Precipitation of Coherent and Incoherent Precipitates on the Ductility and Toughness of High-Strength Steel. 127-139A
Excimer Laser Surface Processing of Ti—6Al—4V. 215-224A
Age-Hardening Behavior of Titanium Alloy Ti—6Al—5Zr—0.5Mo—0.25Si. 763-766A
Phase Chemistry and Precipitation Reactions in Maraging Steels. I. Introduction and Study of Cobalt-Containing C-300 Steel. 1221-1239B
Microstructural Changes in As-Cast M2 Grade High Speed Steel During Hot Forging. 2171-2180A
Precipitation Hardening in 350 Grade Maraging Steel. 2429-2442A
Dilatometric Technique for Evaluation of the Kinetics of Solid-State Transformation of Maraging Steel. 2653-2656A

Hardness, High temperature effects
Phase Equilibria Effect on the Enhanced Liquid Phase Sintering of Tungsten—Copper. 2369-2377A

Hardness, Microstructural effects
Effect of Microstructure on the Corrosion and Deformation Behavior of a Newly Developed 6Mn—5Cr—1.5Cu Corrosion-Resistant White Iron. 445-457A

Hardness, Stress effects
Layer Thickness Effect on Ductile Tensile Fracture of Ultrahigh Carbon Steel—Brass Laminates. 1647-1653A

Hardness tests
Effect of Stretching on the Precipitation Kinetics of an Al—2.0Li—2.8Cu—0.5Mg(—0.13Zr) Alloy. 2613-2621A

HAZ
See Heat affected zone

Hazardous wastes
See Air pollution

Hazelett process
See Continuous casting

HBI
See Direct reduced iron

Heap leaching
A Mathematical Model for Heap Leaching of One or More Solid Reactants From Porous Ore Pellets. 1087-1102B

Heat affected zone
Fracture Toughness Analysis of Heat-Affected Zones in High-Strength Low-Alloy Steel Welds. 1133-1141A
Microstructural Characterization of Incoloy 903 Weldments. 1169-1179A
Kinetics of Grain Growth in the Weld Heat-Affected Zone of Alloy 718. 2773-2785A

Heat affected zone, Mechanical properties
Effect of Sulfur Content on the Microstructure and Toughness of Simulated Heat-Affected Zone in Titanium-Killed Steels. 1399-1408B
The Effect of Weld Heat-Affected Zone (HAZ) Liquation Kinetis on the Hot Cracking Susceptibility of Alloy 718. 1409-1422B

Heat capacity
See Specific heat

Heat checking
See Thermal fatigue

Heat conductivity
See Thermal conductivity

Heat content
See Enthalpy

Heat engines, Materials selection
Internal Friction Due to Thermoelastic Martensitic Transformation. 1067-1071A

Heat exchangers, Materials selection
Thermal Conductivity and Thermal Expansion of Graphite Fiber-Reinforced Copper Matrix Composites. (Conference Paper) 43-52A
Reaction Layer Formation at the Graphite/Copper—Chromium Alloy Interface. (Conference Paper) 53-60A
Microstructural Control in an Aluminum Core Alloy for Brazing Sheet Applications. 1935-1942A

Heat flow
See Heat transmission

Heat flux
See Heat transmission

Heat measurement
See Calorimetry

Heat of activation
See Activation energy

Heat of condensation
See Heat of vaporization

Heat of decomposition
See Heat of formation

Heat of dissociation
See Heat of formation

Heat of dissolution
See Heat of solution

Heat of formation
Determination of Standard Gibbs Energies of Formation of MgO, SrO, and BaO. 487-492B
Determination of Standard Gibbs Energy of Formation of Ca_3N_2. 907-909B
Standard Enthalpies of Formation of NbB_2, MoB, and ReB_2 by High-Temperature Direct Synthesis Calorimetry. 947-950A
Thermochemistry of Binary and Ternary Noble Metal Alloys: the Systems Cu—Ce, Ag—Ce, Au—Ce, Cu—Ag—Au, and Ce—Ag—Au. 1827-1834A

Heat of mixing
See also Heat of solution
Thermochemistry of Binary and Ternary Noble Metal Alloys: the Systems Cu—Ce, Ag—Ce, Au—Ce, Cu—Ag—Au, and Ce—Ag—Au. 1827-1834A

Heat of reaction
See Heat of formation

Heat of solution
Thermodynamics of Iron—Aluminum Alloys at 1573K. 481-486B

Heat of transformation
See Heat of vaporization

Heat of vaporization
The Effect of Manganese on the Activities of Iron, Nickel, and Chromium in an Fe—Ni—Cr Base Alloy. 2379-2382A

Heat resistant alloys
See Superalloys

Heat transfer
Mathematical Modeling of Postcombustion in a KOBM Converter. 179-188B
Entrance Effects on Low Prandtl Number Convection Through a Circular Duct. 197-200B
Solidification of Pure Metal in Imperfect Contact With a Mold. 542-544B
Real-Time Simulation of Heat Transfer in Continuous Casting. 685-693B
Inclusion Behavior and Heat-Transfer Phenomena in Steelmaking Tundish Operations. I. Aqueous Modeling. 755-765B
Inclusion Behavior and Heat-Transfer Phenomena in Steelmaking Tundish Operations. II. Mathematical Model for Liquid Steel in Tundishes. 767-777B
Inclusion Behavior and Heat-Transfer Phenomena in Steelmaking Tundish Operations. III. Applications—Computational Approach to Tundish Design. 779-788B
Determination of Interfacial Heat Transfer Coefficients in Casting and Quenching Using a Solution Technique for Inverse Problems Based on the Boundary Element Method. 1077-1086B
Fundamental Phenomena Governing Heat Transfer During Rolling. 1307-1320B
Numerical Simulation of the Infiltration of Fibrous Preforms by a Pure Metal. 2667-2678A

Heat transmission
Entrance Effects on Low Prandtl Number Convection Through a Circular Duct. 197-200B
Accretion Growth on Single-Pipe Tuyeres. I. Model Development and Preliminary Analysis. 571-582B
Accretion Growth on Single-Pipe Tuyeres. II. Model Results and Discussion. 583-591B

Heat transmission, Diffusion effects
The Detection of Solutal Convection During Electrochemical Measurement of the Oxygen Diffusivity in Liquid Tin. 91-100B

Heat treatment
See Annealing
Austenitizing
Isothermal treatment
Normalizing (heat treatment)
Quenching (cooling)
Solution heat treatment
Tempering

Heating
See Superheating

Heating equipment
See Boilers

Heating rate
The Effect of Wire History on the Coarsened Substructure and Secondary Recrystallization of Doped Tungsten. 843-851A
Dilatometric Technique for Evaluation of the Kinetics of Solid-State Transformation of Maraging Steel. 2653-2656A

Heats (energies)
See Heat of mixing

Heavy metal alloys
See Lead base alloys
Tin base alloys

Heavy metals
See Antimony
Bismuth
Lead (metal)
Tin

Heliarc welding
See Gas tungsten arc welding

Helmholtz free energy
See Free energy

Hertz stresses
See Contact stresses

Heterogeneous structure
How Are New Orientations Generated During Primary Recrystallization?en 225-239B
Microstructure-Property Relationships in Low-Density Al—Li—Mg Alloys. 853-863A
How Are New Orientations Generated During Primary Recrystallization?en 1001-1015A
The Combined Effect of Grain Size and Strain Rate on the Dislocation Substructures and Mechanical Properties in Pure Aluminum. 1153-1161A
Discussion of "Void Nucleation in Constrained Silver Interlayers" and "Void Growth and Coalescence in Constrained Silver Interlayers". 1877-1878A
Authors' Reply [to Discussion of "Void Nucleation in Constrained Silver Interlayers" and "Void Growth and Coalescence in Constrained Silver Interlayers"]. 1878-1879A
Microstructural Features of Flow Instability in α-Titanium Cylinders Under High Strain Rate Compression at 25-400°C. 2513-2520A

Heterogeneous structure, Composition effects
Nonuniform Recrystallization in a Mechanically Alloyed Nickel-Base Superalloy. 1049-1055A

Heterogeneous structure, Cooling effects
Heterogeneous Nucleation of Solidification of Silicon by Solid Aluminum in Hypoeutectic Al—Si Alloy. 1195-1204A
A Model for the Graphite Formation in Ductile Cast Iron. I. Inoculation Mechanisms. 2321-2345A

Heterogeneous structure, Heating effects
Precipitation Hardening in 350 Grade Maraging Steel. 2429-2442A

Heterogeneous structure, Pressure effects
Mechanisms of Heterogeneous Nucleation of Pores in Metals and Alloys. 1845-1856A

HI smelt process
See Direct reduction

High alloy steels
See Maraging steels
Stainless steels

High carbon steels, Casting
Empowerment With Knowledge—Toward the Intelligent Mold for the Continuous Casting of Steel Billets. 917-935B

High carbon steels, Composite materials
Layer Thickness Effect on Ductile Tensile Fracture of Ultrahigh Carbon Steel—Brass Laminates. 1647-1653A

High carbon steels, Mechanical properties
The Microstructural Evolution, Crystallography, and Thermal Processing of Ultrahigh Carbon Fe—1.85% C Melt-Spun Ribbon. 809-818A

High cycle fatigue, Composition effects
The Influence of Matrix Microstructure and TiC Reinforcement on the Cyclic Response and Fatigue Behavior of 2219 Aluminum. 2545-2557A

High energy milling
See Mechanical alloying

High speed tool steels, Heat treatment
Microstructural Changes in As-Cast M2 Grade High Speed Steel During Hot Forging. 2171-2180A

High speed tool steels, Microstructure
As-Cast Carbides in High-Speed Steels. 1265-1272B

High strength low alloy steels, Mechanical properties
The Role of Mobile Dislocations in the Nucleation of Brittle Fracture. (Conference Paper) 545-552A
Dynamic Fracture Initiation Behavior of an HY-100 Steel. 901-912A
Effect of Deformation Parameters on the No-Recrystallization Temperature in Niobium-Bearing Steels. 2151-2159A
Microstructural Examination of Fatigue Crack Tip in High Strength Steel. 2209-2216A
Microstructural Study of Adiabatic Shear Band Formed by Ballistic Impact in an HY-100 Steel. 2217-2224A
Scaling Laws for Fatigue Crack Growth of Large Cracks in Steels. 2473-2486A

High strength low alloy steels, Phases (state of matter)
Incomplete Reaction Phenomenon in High Strength Bainitic Steels. 2145-2150A

High strength low alloy steels, Rolling
Fundamental Phenomena Governing Heat Transfer During Rolling. 1307-1320B

High strength low alloy steels, Welding
Fracture Toughness Analysis of Heat-Affected Zones in High-Strength Low-Alloy Steel Welds. 1133-1141A

High strength steels
See also High strength low alloy steels

High strength steels, Heat treatment
The Effect of the Precipitation of Coherent and Incoherent Precipitates on the Ductility and Toughness of High-Strength Steel. 127-139A
Transmission Electron Microscopy Examination of Hardening and Toughening Phenomena in Aermet 100. 1943-1955A

High strength steels, Mechanical properties
The Growth of Small Fatigue Cracks in A286 Steel. 689-700A

HIP
See Hot isostatic pressing

Homogeneous structure
On the Anchoring of Solids at Curved Fluid Interfaces. 1673-1677A
Correction to "On the Anchoring of Solids at Curved Fluid Interfaces". 1673-1677A

Homogeneous structure, Cooling effects
Misfit Accommodation in a Quenched and Aged Al—Cu Alloy With Silicon Particles. 1723-1731A

Homogeneous structure, Deformation effects
An Analysis of Deformation, Temperature, and Microstructure for Hot-Extruded Titanium Alloy. 139-144B
Development of an Induction Melting Process for Materials With Low Electrical Conductivity or High Melting Point. 259-264B
General Aspects of the Thermomechanical Treatment of Two-Phase Intermetallic TiAl Compounds. 1795-1806A

Homogeneous structure, Heating effects
Kinetics of Grain Growth in the Weld Heat-Affected Zone of Alloy 718. 2773-2785A

Homogeneous structure, High temperature effects
Compositional Changes in Aluminum—Lithium-Base Alloys Caused by Oxidation. 2279-2288A

Homogenizing
Homogenization of Near-Gamma Titanium Aluminides: Analysis of Kinetics and Process Scaleup Feasibility. 1295-1306B
Melting of Secondary-Phase Particles in Al—Mg—Si Alloys. 2629-2641A
Kinetics of Grain Growth in the Weld Heat-Affected Zone of Alloy 718. 2773-2785A

Hot briquetted iron
See Direct reduced iron

Hot brittleness
See Brittleness

Hot cracking
See Cracking (fracturing)

Hot cracking (welds)
See Weld defects

Hot deformation
See Deformation

Hot ductility
See Ductility

Hot extrusion
Strength and Electrical Conductivity of Deformation-Processed Cu—15 Vol% Fe Alloys Produced by Powder Metallurgy Techniques. (Conference Paper) 35-42A
An Analysis of Deformation, Temperature, and Microstructure for Hot-Extruded Titanium Alloy. 139-144B
Formation of $L1_2$-Structured Ni_3Si. 283-292A
The Role of Microstructure on Strength and Ductility of Hot-Extruded Mechanically Alloyed NiAl. 1993-2000A

Hot forging
Microstructural Changes in As-Cast M2 Grade High Speed Steel During Hot Forging. 2171-2180A

Hot forming
See Hot forging

Hot hardness
See Hardness

Hot isostatic pressing
Strength and Electrical Conductivity of Deformation-Processed Cu—15 Vol% Fe Alloys Produced by Powder Metallurgy Techniques. (Conference Paper) 35-42A
The Role of Inclusion and Pore Content on the Fracture Toughness of Powder-Processed Blended Elemental Titanium Alloys. 161-174A
Model-Based Feedback Control of Deformation Processing With Microstructure Goals. 289-300B
Strength, Fracture, and Fatigue Behavior of Advanced High-Temperature Intermetallics Reinforced With Ductile Phases. (Conference Paper) 585-600A
Hot Isostatic Pressing (HIP) of Powder Mixtures and Composites: Packing, Densification, and Microstructural Effects. 1345-1354B
Reaction Sintering of Cold-Extruded Elemental Powder Mixture Ti—48Al. 1517-1526A

Hot pressing
See Hot isostatic pressing

Hot rolling
Fundamental Phenomena Governing Heat Transfer During Rolling. 1307-1320B
Influence of Strain Rate on Interpass Softening During the Simulated Warm Rolling of Interstitial-Free Steels. 1543-1553A
Simulated Hot Working, Cold Working, and Annealing of Aluminum-Containing Steels. 1589-1596A
Densification and Deformation Behavior of a Porous Metal Strip During Hot Rolling. 1753-1760A
Physical Asymmetry of the Crystallographic Texture of an Interstitial-Free Sheet Steel. 2009-2019A

Hot roughing
See Hot rolling

Hot shortness
See Brittleness

Hot strength
See Tensile strength

Hot tensile strength
See Tensile strength

Hot working
See Hot extrusion
Hot rolling

Hydrochloric acid, Environment
Hydrogen-Facilitated Corrosion and Stress Corrosion Cracking of Austenitic Stainless Steel of Type 310. 959-962A

Hydrodynamics
Stability of Metal/Electrolyte Interface in Hall—Héroult Cells: Effect of the Steady Velocity. 899-906B

Hydrogen
See also Deuterium

Hydrogen, Diffusion
Hydrogen Diffusion and Its Relevance to Intergranular Cracking in Nickel. 105-112A

Hydrogen, Dopants
Hydrogen Tolerance of a Ti_3Al-Based Alloy. 1095-1106A

Hydrogen, Environment
Effects of Hydrogen on the Mixed Mode I/III Toughness of a High-Purity Rotor Steel. 1450-1451B
Mechanisms of Heterogeneous Nucleation of Pores in Metals and Alloys. 1845-1856A
The Reduced Pressure Test as a Measuring Tool in the Evaluation of Porosity/Hydrogen Content in Al—7 wt.% Si—10 vol.% SiC(p) Metal Matrix Composite. 1857-1868A
Calorimetrically Measured Enthalpies for the Reaction of Hafnium With $H(D)_2$ (g). 2623-2627A
Environmental Fatigue of an Al—Li—Cu Alloy. II. Microscopic Hydrogen Cracking Processes. 2751-2762A

Hydrogen, Solubility
Hydrogen Probe Equipped With $SrCeO_3$-Based Proton Conductor and Ca/CaH_2 Reference Electrode. 789-794B

Hydrogen embrittlement
Hydrogen Tolerance of a Ti_3Al-Based Alloy. 1095-1106A
Effects of Hydrogen on Mechanical Properties and Fracture Mechanism of 8090 Al—Li alloy. 1355-1361B

Hydrogen embrittlement, Environmental effects
A Mechanism for Transgranular Stress-Corrosion Cracking. (Conference Paper) 553-559A
Environmental Fatigue of an Al—Li—Cu Alloy. II. Microscopic Hydrogen Cracking Processes. 2751-2762A

Hydrogen embrittlement, Stress effects
Stress-Corrosion Cracking in Equiaxed 7075 Aluminum Under Tension and Torsion Loading. 2569-2575A

Hydrogen embrittlement, Welding effects
Effect of Activity Differences on Hydrogen Migration in Dissimilar Titanium Alloy Welds. 2763-2771A

Hydrogenation
Surface Hardening of Ti—6Al—4V Alloy by Electrochemical Hydrogenation. 1181-1185A
Calorimetrically Measured Enthalpies for the Reaction of H_2 (g) With Zirconium and Zirconium Alloys. 1471-1479A

Hydrolytic resistance
See Corrosion resistance

Hydrometallurgy
An Evaluation of the Physicochemical Degradation of Gold Ion-Exchange Resins in Hypochlorite Solutions. 17-25B

Hydrostatic forming
See Hydrostatic pressing

Hydrostatic pressing
On the Development of Constitutive Relations for Metallic Powders. 2071-2081A

Hydrostatic pressure
The Effects of Superimposed Hydrostatic Pressure on Deformation and Fracture. I. Monolithic 6061 Aluminum. (Conference Paper) 601-608A
The Effect of Superimposed Hydrostatic Pressure on Deformation and Fracture. II. Particulate-Reinforced 6061 Composites. (Conference Paper) 609-615A

Hypersonic planes, Materials selection
Thermal Conductivity and Thermal Expansion of Graphite Fiber-Reinforced Copper Matrix Composites. (Conference Paper) 43-52A
Reaction Layer Formation at the Graphite/Copper—Chromium Alloy Interface. (Conference Paper) 53-60A

I R drop
See Electric potential

Immersion testing (ultrasonic)
See Ultrasonic testing

Impact strength
Adiabatic Shear Band Formation in Al—SiC_w Composites. 895-900A

Impact strength, Microstructural effects
The Role of Mobile Dislocations in the Nucleation of Brittle Fracture. (Conference Paper) 545-552A

Impact tests
See also Ballistic impact tests
Reaction Layer Formation at the Graphite/Copper—Chromium Alloy Interface. (Conference Paper) 53-60A

Impact toughness
See Impact strength

Impermeability
See Permeability

Implants
See Surgical implants

Incandescent lamps
Potassium Bubbles in Tungsten Wire. 1073-1084A

Incineration
See Combustion

Inclusions
The Role of Inclusion and Pore Content on the Fracture Toughness of Powder-Processed Blended Elemental Titanium Alloys. 161-174A
Effect of Melt Cleanliness on the Properties of an Al—10 wt.% Si—10 vol.% SiC(p) Composite. 1631-1645A

Inclusions, Cooling effects
A Model for the Graphite Formation in Ductile Cast Iron. I. Inoculation Mechanisms. 2321-2345A

Inclusions, Deformation effects
Inclusion Behavior and Heat-Transfer Phenomena in Steelmaking Tundish Operations. I. Aqueous Modeling. 755-765B
Inclusion Behavior and Heat-Transfer Phenomena in Steelmaking Tundish Operations. II. Mathematical Model for Liquid Steel in Tundishes. 767-777B

Inclusions, Environmental effects
The Reduced Pressure Test as a Measuring Tool in the Evaluation of Porosity/Hydrogen Content in Al—7 wt.% Si—10 vol.% SiC(p) Metal Matrix Composite. 1857-1868A

Inclusions, Heating effects
Microstructure and Hydrogen Effects on Fracture in the Alloy A-286. 1983-1991A

Index of refraction
See Refractivity

Indium, Alloying elements
Metal-Induced Embrittlement of Low-Carbon Steel by Indium in Association With Tellurium. 504-508A

Induction furnaces
See Electric induction furnaces

Induction melting
Development of an Induction Melting Process for Materials With Low Electrical Conductivity or High Melting Point. 259-264B
Magnesium Silicide Intermetallic Alloys. 2383-2391A

Inductovac process
See Induction melting

Inelasticity
See Elasticity

Inert gas welding
See Gas tungsten arc welding

Infiltration
Evaluation of the Wettability of Liquid Aluminum With Ceramic Particulates (SiC, TiC, Al_2O_3) by Means of Pressure Infiltration. 1423-1432B
Reactions During Infiltration of Graphite Fibers by Molten Al—Ti Alloy. 2577-2583A

Inflammability
See Flammability

Ingot casting
Synthesis of TiC Particulates and Their Segregation During Solidification in In Situ Processed Al—TiC Composites. 2358-2362A
Mechanism of TiC Formation in Al/TiC In Situ Metal-Matrix Composites. 2803-2805A

Initiation
See Crack initiation

Injection casting
See Die casting

Injection molding
Numerical Simulation of the Infiltration of Fibrous Preforms by a Pure Metal. 2667-2678A

Inoculation
A Model for the Graphite Formation in Ductile Cast Iron. I. Inoculation Mechanisms. 2321-2345A

Inorganic acids
See Hydrochloric acid
Sulfuric acid

Inorganic compounds
See Ceramics

Intensity
See Stress intensity

Interface reactions
How Fast Can We Go? The Status of our Knowledge of the Rates of Gas—Liquid Metal Reactions. 241-258B
Stability of Metal/Electrolyte Interface in Hall—Héroult Cells: Effect of the Steady Velocity. 899-906B

Interface reactions, Alloying effects
Interfacial Phenomena in the Reactions of Aluminum and Al—Ti Melts With KF—AlF_3 and NaF—AlF_3 Melts. 955-961B

Interface reactions, Cooling effects
Interfacial Phenomena in the Reactions of Al—B, Al—Ti—B, and Al—Zr—B Alloys With KF—AlF_3 and NaF—AlF_3 Melts. 947-953B

Interface reactions, Field effects
Shape and Stability Computations of Electromagnetically Confined Liquid Metal Boundaries. 171-178B

Interface reactions, Temperature effects
Reduction Rate of SiO_2 in Slag by Carbon-Saturated Iron. 113-120B

Interfaces
Four Wetting Phases in AlN/Al and AlN Composites/Al Systems, Models of Nonreactive, Reactive, and Composite Systems. 1391-1397B

Interfacial energy
See Surface energy

Interfacial surface tension
See Surface tension

Intergranular corrosion
Microstructural Control in an Aluminum Core Alloy for Brazing Sheet Applications. 1935-1942A

Intergranular corrosion, Environmental effects
Stress Corrosion Cracking of Ag—20Au in $HClO_4$, $AgClO_4$, and KCl Solutions by Surface Mobility. 425-433A

Intergranular fracture, Cooling effects
Improved Model to Predict Properties of Aluminum Alloy Products After Continuous Cooling. 2417-2427A

Intergranular fracture, Corrosion effects
Effects of Hydrogen on Mechanical Properties and Fracture Mechanism of 8090 Al—Li alloy. 1355-1361B

Intergranular fracture, Heating effects
Mechanical Behavior of Double-Aged AA8090. 833-841A

Intergranular fracture, Microstructural effects
Auger Electron Spectroscopy Study of Grain Boundary Segregation in Alloy K-500. I. Behavior in As-Processed State. 1897-1907A

Interlayers, Mechanical properties
Discussion of "Void Nucleation in Constrained Silver Interlayers" and "Void Growth and Coalescence in Constrained Silver Interlayers". 1877-1878A
Authors' Reply [to Discussion of "Void Nucleation in Constrained Silver Interlayers" and "Void Growth and Coalescence in Constrained Silver Interlayers"]. 1878-1879A

Intermetallic compounds
See Intermetallics

Intermetallic phases
Strength and Toughness of a Nb/Nb_5Si_3 Composite. 501-504A
Metal-Induced Embrittlement of Low-Carbon Steel by Indium in Association With Tellurium. 504-508A
Toughening Mechanisms in Titanium Aluminides. (Conference Paper) 569-583A
Calorimetrically Measured Enthalpies for the Reaction of H_2 (g) With Zirconium and Zirconium Alloys. 1471-1479A
Reaction Sintering of Cold-Extruded Elemental Powder Mixture Ti—48Al. 1517-1526A
Fatigue Crack Growth Through the Lamellar Microstructure of an Alloy Based on TiAl at 25 and 800°C. 1555-1574A
Intrinsic Fatigue Crack Growth Rates for Al—Li—Cu—Mg Alloys in Vacuum. 1807-1817A

Intermetallic phases, Alloying effects
Microstructure and Mechanical Behavior of Al—Li—Cu—Mg Alloy 8090 Microalloyed With Vanadium and Beryllium. 95-104A
Effect of Ti/Al Ratio and Chromium, Niobium, and Hafnium Additions on Material Factors and Mechanical Properties in TiAl. 141-150A
Interfacial Phenomena in the Reactions of Aluminum and Al—Ti Melts With KF—AlF_3 and NaF—AlF_3 Melts. 955-961B
Phase Chemistry and Precipitation Reactions in Maraging Steels. II. Cobalt-Free T-300 Steel. 1233-1239B

Intermetallic phases, Composition effects
Hydrogen Tolerance of a Ti_3Al-Based Alloy. 1095-1106A

Intermetallic phases, Cooling effects
Study of the Mechanism of Grain Refinement of Aluminum After Additions of Titanium- and Boron-Containing Master Alloys. 481-491A
The Solidification Behavior of 8090 Al—Li Alloy. 857-865B
Interfacial Phenomena in the Reactions of Al—B, Al—Ti—B, and Al—Zr—B Alloys With KF—AlF_3 and NaF—AlF_3 Melts. 947-953B
Synthesis of TiC Particulates and Their Segregation During Solidification in In Situ Processed Al—TiC Composites. 2358-2362A
Improved Model to Predict Properties of Aluminum Alloy Products After Continuous Cooling. 2417-2427A

Intermetallic phases, Deformation effects
General Aspects of the Thermomechanical Treatment of Two-Phase Intermetallic TiAl Compounds. 1795-1806A
Creep Behavior of an Al-2.0 Wt.%.Li Alloy in the Temperature Range 300-500°C. 2001-2007A

Intermetallic phases, Heating effects
Transformation to Ni_5Al_3 in a 63.0 At.% Ni—Al Alloy. 83-94A
Age-Hardening Behavior of Titanium Alloy Ti—6Al—5Zr—0.5Mo—0.25Si. 763-766A
Phase Chemistry and Precipitation Reactions in Maraging Steels. I. Introduction and Study of Cobalt-Containing C-300 Steel. 1221-1239B

Phase Chemistry and Precipitation Reactions in Maraging Steels. III. Model Alloys. 1241-1249B
Microstructural Characterisation of Near-α Titanium Alloy Ti—6Al—4Sn—4Zr—0.70Nb—0.50Mo—0.40Si. 1273-1280B
Homogenization of Near-Gamma Titanium Aluminides: Analysis of Kinetics and Process Scaleup Feasibility. 1295-1306B
Morphological Effect on the Mechanical Behavior of a Two-Phase Ti_3Al—Nb Alloy. 1785-1793A
Precipitation Hardening in 350 Grade Maraging Steel. 2429-2442A
Melting of Secondary-Phase Particles in Al—Mg—Si Alloys. 2629-2641A
Crystallographic Orientation Relationships Among η-Ni_3Ti Precipitate, Reverted Austenite, and Martensitic Matrix in Fe—10Cr—10Ni—2W Maraging Alloy. 2643-2652A
Dilatometric Technique for Evaluation of the Kinetics of Solid-State Transformation of Maraging Steel. 2653-2656A

Intermetallic phases, High temperature effects
Formation of $L1_2$-Structured Ni_3Si. 283-292A
Phase Equilibria Effect on the Enhanced Liquid Phase Sintering of Tungsten—Copper. 2369-2377A

Intermetallic phases, Temperature effects
Thermodynamics of Iron—Aluminum Alloys at 1573K. 481-486B
Calorimetrically Measured Enthalpies for the Reaction of $H_2(D_2)$ (g) With Titanium and Ti—Ni Alloys at 323K. 867-873B
An Experimental Study and Thermodynamic Evaluation of the Fe—Mo—Ti System at 1000°C. 2137-2144A
Reactions During Infiltration of Graphite Fibers by Molten Al—Ti Alloy. 2577-2583A

Intermetallic phases, Welding effects
New Explosive Welding Technique to Weld Aluminum Alloy and Stainless Steel Plates Using a Stainless Steel Intermediate Plate. 2289-2297A

Intermetallics, Composite materials
On the Flow Behavior of Constrained Ductile Phases. 403-415A
A Structural Study of Oxidation in a Zirconia-Toughened Alumina Fiber-Reinforced Fe_3Al Composite. 435-443A
Toughening Mechanisms in Intermetallics. (Conference Paper) 561-567A
Strength, Fracture, and Fatigue Behavior of Advanced High-Temperature Intermetallics Reinforced With Ductile Phases. (Conference Paper) 585-600A
The Mechanical Behavior of Directionally Solidified Al—Ni in Compression. 713-719A
Microstructural Toughening Mechanisms in γ-TiAl · 20% TiCb as Determined by FRASTA. 883-894A
Interfacial Shear Strength of Cast and Directionally Solidified NiAl—Sapphire Fiber Composites. 2119-2125A
Creep Regimes for Directionally Solidified Al—Al_3Ni Eutectic Composite. 2721-2730A

Intermetallics, Crystal growth
Kinetics of Growth of the Ti—Co Intermetallic Compounds During Rapid Solidification. 1869-1875A

Intermetallics, Extrusion
The Role of Microstructure on Strength and Ductility of Hot-Extruded Mechanically Alloyed NiAl. 1993-2000A

Intermetallics, Impurities
Determination of Standard Gibbs Energy of Formation of Ca_3N_2. 907-909B

Intermetallics, Mechanical properties
Boron and Off-Stoichiometry Effects on the Strength and Ductility of AlRu. 227-230A
High-Temperature Creep of the Intermetallic Alloy Ni_3Al. 335-341A
An Analytical Description for the Deformation Response of Ni_3Al Alloys in the Anomalous Regime. 397-401A
Microhardness and Compressive Mechanical Behavior of $L1_2$ Titanium Trialuminides. 935-946A
Magnesium Silicide Intermetallic Alloys. 2383-2391A
Surface Preparation and Bend Ductility of NiAl. 2593-2596A

Intermetallics, Metallography
Fracture Morphology of NiAl Single Crystals Tested in Tension. 1363-1371B

Intermetallics, Phases (state of matter)
Phase Selection in Undercooled Ti_3Sn Melts. 1481-1496A

Intermetallics, Powder technology
Selective Laser Sintering of Intermetallics. 757-759A

Internal combustion engines
See Gas turbine engines

Internal friction
Internal Friction Due to Thermoelastic Martensitic Transformation. 1067-1071A
Time Dependence of Internal Friction and Shape Change in Cu—Zn—Al Shape Memory Alloys. 2743-2749A

Internal stress
See Residual stress

Investment casting, Quality control
Three-Dimensional Probabilistic Simulation of Solidification Grain Structures: Application to Superalloy Precision Castings. 467-479A

Investment molding
See Investment casting

Ion exchange resins
An Evaluation of the Physicochemical Degradation of Gold Ion-Exchange Resins in Hypochlorite Solutions. 17-25B

Ion exchanging
An Evaluation of the Physicochemical Degradation of Gold Ion-Exchange Resins in Hypochlorite Solutions. 17-25B
The Separation of Nickel and Cobalt in a Mixed Sulfide Precipitate. 189-192B
The Reduction Mechanism of Chromite in the Presence of a Silica Flux. 987-995B

Ionic mobility
A Study of Ion Activities in Ionic Solutions. 317-323B

Ionization
A Study of Ion Activities in Ionic Solutions. 317-323B

IR drop
See Electric potential

Iron, Alloying additive
Motions of Alloying Additions in the CAS Steelmaking Operations. 649-655B
Microhardness and Compressive Mechanical Behavior of $L1_2$ Titanium Trialuminides. 935-946A

Iron, Alloying elements
Motions of Alloying Additions During Furnace Tapping in Steelmaking Processing Operations. 639-648B

Iron, Binary systems
Thermodynamics of Iron—Aluminum Alloys at 1573K. 481-486B

Iron, Casting
Experimental Investigation of the Phenomenon of Centrifuging of Liquids. 463-473B

Iron, Chemical analysis
The Oxidation of Ilmenite and Its Relationship to the FeO—Fe_2O_3—TiO_2 Phase Diagram at 1073 and 1140K. 1257-1264B

Iron, Composite materials
Ductile Fracture of Mechanically Alloyed Iron—Yttria Alloys. 681-687A

Iron, Extraction
A General Model for Leaching of One or More Solid Reactants From Porous Ore Particles. 157-169B

Iron, Heat treatment
Decreased Gas Consumption of a Fluidized Bed Furnace. 889-897B

Iron, Quaternary systems
A Thermodynamic Evaluation of the Fe—Cr—Mn—C System. 1017-1025A
Thermodynamic Analysis and Evaluation of the Fe—Cr—Mn—N System. 2393-2409A

Iron, Reactions (chemical)
Reduction Rate of SiO_2 in Slag by Carbon-Saturated Iron. 113-120B
How Fast Can We Go? The Status of our Knowledge of the Rates of Gas—Liquid Metal Reactions. 241-258B
Discussion of "Dissolution Equilibrium of Magnesium Vapor in Liquid Iron". 909-910B

Iron, Recovering
Thermodynamic Activity of Antimony at Dilute Solutions in Carbon-Saturated Liquid Iron. 963-973B

Iron, Reduction (chemical)
Quantitative Method for Silica Flux Evaluation. 63-73B
A Mössbauer Study of the Behavior of Iron Cations in Iron Oxide-Containing Melts at 1400°C. 101-111B
Desulfurization of Bath Smelter Metal. 441-447B
Experimental Investigations of Dissolution Rates of Carbonaceous Materials in Liquid Iron—Carbon Melts. 629-638B

Iron, Steel making
Thermodynamics of Oxygen and Nitrogen in Liquid Iron Equilibrated With CaO—SiO_2—Al_2O_3 Slags. 121-130B
The Reduction Mechanism of Chromite in the Presence of a Silica Flux. 987-995B

Iron, Ternary systems
A Thermodynamic Evaluation of the Fe—Mn—N System. 629-645A
A Thermodynamic Evaluation of the Cr—Mn and Fe—Cr—Mn Systems. 1919-1933A
An Experimental Study and Thermodynamic Evaluation of the Fe—Mo—Ti System at 1000°C. 2137-2144A

Iron, Thermal properties
Solidification of Pure Metal in Imperfect Contact With a Mold. 542-544B

Iron and steel making
See Ironmaking
Steel making

Iron base alloys
See Ferrous alloys

Iron compounds
See also Pyrite

Iron compounds, Composite materials
A Structural Study of Oxidation in a Zirconia-Toughened Alumina Fiber-Reinforced Fe_3Al Composite. 435-443A

Iron ores
See also Pyrite

Iron ores, Chemical analysis
The Oxidation of Ilmenite and Its Relationship to the FeO—Fe_2O_3—TiO_2 Phase Diagram at 1073 and 1140K. 1257-1264B

Iron powder
See Iron

Ironmaking
High Nitrogen Concentration in Fe—Cr—Ni Alloys. 73-82A
How Fast Can We Go? The Status of our Knowledge of the Rates of Gas—Liquid Metal Reactions. 241-258B
Gaseous Reduction of Laterite Ores. 271-295B
Reduction of Iron Ore Fines by Coal Fines in a Packed Bed and Fluidized Bed Apparatus—a Comparative Study. 511-520B
Calculation of Sulfide Capacities of Multicomponent Slags. 817-825B

Isomer shift
See Mossbauer spectroscopy

Isostatic pressing
See Cold isostatic pressing
Hot isostatic pressing

Isothermal treatment
Misfit Accommodation in a Quenched and Aged Al—Cu Alloy With Silicon Particles. 1723-1731A

Izod impact tests
See Impact tests

Jet engines
See Gas turbine engines

Joints
See Brazed joints
Welded joints

Junghans Rossi casting
See Continuous casting

Kaldo process
See Oxygen steel making

Killed steels
See also Aluminum killed steels

Killed steels, Welding
Effect of Sulfur Content on the Microstructure and Toughness of Simulated Heat-Affected Zone in Titanium-Killed Steels. 1399-1408B

Kinematography
See Cinematography

Kinetics
See also Reaction kinetics
The Effect of Weld Heat-Affected Zone (HAZ) Liquation Kinetis on the Hot Cracking Susceptibility of Alloy 718. 1409-1422B

Kold casting
See Investment casting

Krupp Renn process
See Direct reduction

Ladle furnaces
Accretion Growth on Single-Pipe Tuyeres. I. Model Development and Preliminary Analysis. 571-582B

Ladle metallurgy
Thermodynamics of Oxygen and Nitrogen in Liquid Iron Equilibrated With CaO—SiO_2—Al_2O_3 Slags. 121-130B
Accretion Growth on Single-Pipe Tuyeres. I. Model Development and Preliminary Analysis. 571-582B
Accretion Growth on Single-Pipe Tuyeres. II. Model Results and Discussion. 583-591B
Motions of Alloying Additions During Furnace Tapping in Steelmaking Processing Operations. 639-648B
Motions of Alloying Additions in the CAS Steelmaking Operations. 649-655B
Measurement and Modeling of Turbulence in the Gas/Liquid Two-Phase Zone During Gas Injection. 695-705B

Lamellar structure
Rate and Environmental Effects on Fracture of a Two-Phase TiAl-Alloy. 113-125A
Toughening Mechanisms in Titanium Aluminides. (Conference Paper) 569-583A
A Transmission Electron Microscopy Study of Copper Precipitation in the Cementite Phase of Hypereutectoid Alloy Steels. 781-793A
Fatigue Crack Growth Through the Lamellar Microstructure of an Alloy Based on TiAl at 25 and 800°C. 1555-1574A
Spontaneous Evolution of Microstructure in Materials. 1689-1721A

Lamellar structure, Alloying effects
The Kinetics of Composite Particle Formation During Mechanical Alloying. 647-657A
As-Cast Carbides in High-Speed Steels. 1265-1272B

Lamellar structure, Cooling effects
Spray Deposition of a Sn—40 wt.% Pb Alloy With Uniform Droplets. 1187-1193A

Lamellar structure, Deformation effects
An Investigation of Superplasticity in a Thermomechanically Processed U—2Mo (α + δ) Alloy. 369-377A

Lamellar structure, Heating effects
The Microstructure of Discontinuously Precipitated Lamellae in an Austenitic Fe—42.4 wt.% Ni—4.15 wt.% Al—0.45 wt.% C Alloy. 1039-1047A

Lamina
See Laminates

Laminates, Mechanical properties
On the Flow Behavior of Constrained Ductile Phases. 403-415A
Evolution of Damage and Plasticity in Titanium-Based, Fiber-Reinforced Composites. 1597-1610A
Layer Thickness Effect on Ductile Tensile Fracture of Ultrahigh Carbon Steel—Brass Laminates. 1647-1653A

Laser beam hardening
Excimer Laser Surface Processing of Ti—6Al—4V. 215-224A

Laser beam melting
Keyhole Formation. 875-880B

Laser beam welding
Calculation of Weld Metal Composition Change in High-Power Conduction Mode Carbon Dioxide Laser-Welded Stainless Steels. 145-155B
Keyhole Formation. 875-880B
The Effects of Process Variables on Pulsed Nd:YAG Laser Spot Welds. I. AISI 409 Stainless Steel. 1065-1076B

Laser processing
See also Laser beam hardening
Laser beam melting
Laser beam welding
Selective Laser Sintering of Intermetallics. 757-759A
Microstructural Characterization and *In Situ* Transmission Electron Microscopy Analysis of Laser-Processed and Thermally Treated Fe—Cr—W—C Clad Coatings. 1621-1629A

Laser welding
See Laser beam welding

Laterites, Reduction (chemical)
Gaseous Reduction of Laterite Ores. 271-295B

Lattice constant
See Lattice parameters

Lattice parameters
Kinetics of the Dissolution of Pure Silver and Silver—Gold Alloys in Nitric Acid Solution. 827-837B
Large Deformation Simple Compression of a Copper Single Crystal. 989-992A

Lattice parameters, Alloying effects
Effect of Ti/Al Ratio and Chromium, Niobium, and Hafnium Additions on Material Factors and Mechanical Properties in TiAl. 141-150A
Effects of Silicon Addition on the First Stage of Precipitation in the Al—1.52% Cu—0.75% Mg Alloy. 2181-2187A

Lattice parameters, Cooling effects
Misfit Accommodation in a Quenched and Aged Al—Cu Alloy With Silicon Particles. 1723-1731A

Lattice parameters, Heating effects
Transformation to Ni_5Al_3 in a 63.0 At.% Ni—Al Alloy. 83-94A
The Morphological Changes of γ' Precipitates in a Ni—8Al (st.%) Alloy During Their Coarsening. 1975-1981A

Lattice parameters, Stress effects
Residual Strain Gradient Determination in Metal Matrix Composites by Synchrotron X-Ray Energy Dispersive Diffraction. 1117-1124A
Residual Stress Measurements by X-Ray Diffraction in the Ferritic/Austenitic Interface Weldment. 2095-2106A
Damping Characteristics of TiNi Shape Memory Alloys. 2189-2194A

Lattice parameters, Temperature effects
The Glass—Liquid and Solid—Jelly Transition Temperatures. 309-315B
Thermodynamic Study of the NiO—MgO System in the Temperature Range 1073-1473K by a Galvanic Cell Technique. 1023-1030B
Discussion of "An Interpretation of the Carbon Redistribution Process During Aging of High-Carbon Martensite" and Authors Reply. 2585-2589A

Lattice vacancies, Cooling effects
Misfit Accommodation in a Quenched and Aged Al—Cu Alloy With Silicon Particles. 1723-1731A

Lattice vacancies, Radiation effects
Early Stages of Decomposition in Iron—Carbon and Iron—Nitrogen Martensites: Diffraction Analysis Using Synchrotron Radiation. 1965-1973A

Laves phase, Alloying effects
Phase Chemistry and Precipitation Reactions in Maraging Steels. IV. Discussion and Conclusions. 1251-1256B

Laves phase, Heating effects
Phase Chemistry and Precipitation Reactions in Maraging Steels. III. Model Alloys. 1241-1249B

Laves phase, Welding effects
Microstructural Characterization of Incoloy 903 Weldments. 1169-1179A

Layers
See Interlayers

Leaching
See also Bacterial leaching
Heap leaching
A General Model for Leaching of One or More Solid Reactants From Porous Ore Particles. 157-169B
^{197}Au Mössbauer Study of Copper Refinery Anode Slimes. 457-462B
Leaching of Cu_2O With Aqueous Solution of Sulfur Dioxide. 563-570B

Lead (metal), Casting
Experimental Investigation of the Phenomenon of Centrifuging of Liquids. 463-473B

Lead (metal), Extraction
Accretion Growth on Single-Pipe Tuyeres. I. Model Development and Preliminary Analysis. 571-582B

Lead (metal), Recovering
Thermodynamic Activity of Antimony at Dilute Solutions in Carbon-Saturated Liquid Iron. 963-973B

Lead (metal), Refining
Oxygen Deleading of Lead—Bismuth Alloys. 839-846B

Lead base alloys, Composite materials
Elaboration of Metal Matrix Composites From Thixotropic Alloy Slurries Using a New Magnetohydrodynamic Caster. 493-510B
Hot Isostatic Pressing (HIP) of Powder Mixtures and Composites: Packing, Densification, and Microstructural Effects. 1345-1354B

Lead base alloys, Electrical properties
Electrical Conductivity in Directionally Solidified Pb—9Cu and Pb—20Cu Alloys. 975-979A

Lead base alloys, Microstructure
Thermosolutal Convection and Macrosegregation Caused by Solute Rejection at Cell/Dendrite Tips. 1661-1669A

Lead burning
See Fusion welding

Lead compounds, Impurities
Determination of Standard Gibbs Energy of Formation of Ca_3N_2. 907-909B

Leuders lines
See Luders lines

Levitation, Field effects
Electromagnetic Force Calculations for a Conical Coil. 737-748B

Life
See Fatigue life
Service life

Light metal alloys
See Aluminum base alloys
Titanium base alloys

Light metals
See Aluminum
Beryllium
Magnesium
Titanium

Line defects
See Dislocations

Liquefaction
See Melting

Liquid metal embrittlement, Alloying effects
Metal-Induced Embrittlement of Low-Carbon Steel by Indium in Association With Tellurium. 504-508A

Liquid metals, Diffusion
The Detection of Solutal Convection During Electrochemical Measurement of the Oxygen Diffusivity in Liquid Tin. 91-100B
Determination of Diffusion Coefficients of Strontium in Liquid Aluminum. 707-709B

Liquid metals, Phases (state of matter)
The Activity of $CuO_{0.5}$ Along the Air Isobars in the Systems Cu—O—SiO_2 and Cu—O—CaO at 1300°C. 59-62B

Liquid metals, Physical properties
The Density of Liquid Iron—Carbon Alloys. 5-10B

Liquid metals, Reactions (chemical)
Thermodynamics of Nitrogen in BaO—TiO_x Melts. 131-138B
Discussion of "Dissolution Equilibrium of Magnesium Vapor in Liquid Iron". 909-910B

Liquid metals, Reduction (chemical)
A Mossbauer Study of the Behavior of Iron Cations in Iron Oxide-Containing Melts at 1400°C. 101-111B

Liquid metals, Steel making
Thermodynamics of Oxygen and Nitrogen in Liquid Iron Equilibrated With CaO—SiO_2—Al_2O_3 Slags. 121-130B

Liquid phase diffusion
See Diffusion

Liquid phase sintering
A Model for the Thermal Properties of Liquid-Phase Sintered Composites. 1745-1752A
Synthesis of Bulk and Reinforced Nickel Aluminides by Reactive Infiltration. 2161-2170A
Phase Equilibria Effect on the Enhanced Liquid Phase Sintering of Tungsten—Copper. 2369-2377A

Liquid phases
How Fast Can We Go? The Status of our Knowledge of the Rates of Gas—Liquid Metal Reactions. 241-258B
Activities in Cu_2S—FeS—SnS Melts at 1200°C. 301-308B
Desulfurization of Bath Smelter Metal. 441-447B
Measurement and Modeling of Turbulence in the Gas/Liquid Two-Phase Zone During Gas Injection. 695-705B
Thermodynamic Activity of Antimony at Dilute Solutions in Carbon-Saturated Liquid Iron. 963-973B
Thermodynamic Properties of Zinc-Rich Zinc—Aluminum Melts. 1037-1044B
On the Anchoring of Solids at Curved Fluid Interfaces. 1673-1677A
Correction to "On the Anchoring of Solids at Curved Fluid Interfaces". 1673-1677A

Liquid phases, Alloying effects
The Activity of $CuO_{0.5}$ Along the Air Isobars in the Systems Cu—O—SiO_2 and Cu—O—CaO at 1300°C. 59-62B
Solubility and Thermodynamic Properties of Li_2O in LiF—CaF_2 Melts. 1031-1035B

Liquid phases, Cooling effects
Optical Properties and Spectral Emissivities at 623.8 nm in the Titanium—Aluminum System. 67-72A
Real-Time Simulation of Heat Transfer in Continuous Casting. 685-693B
Kinetics of Growth of the Ti—Co Intermetallic Compounds During Rapid Solidification. 1869-1875A
An Analytical Model for Solute Redistribution During Solidification of Planar, Columnar, or Equiaxed Morphology. 2107-2118A
A Multiphase Solute Diffusion Model for Dendritic Alloy Solidification. 2787-2802A

Liquid phases, Field effects
Shape and Stability Computations of Electromagnetically Confined Liquid Metal Boundaries. 171-178B
Thermosolutal Convection and Macrosegregation Caused by Solute Rejection at Cell/Dendrite Tips. 1661-1669A

Liquid phases, Heating effects
Excimer Laser Surface Processing of Ti—6Al—4V. 215-224A
Melting of Secondary-Phase Particles in Al—Mg—Si Alloys. 2629-2641A
Kinetics of Grain Growth in the Weld Heat-Affected Zone of Alloy 718. 2773-2785A

Liquid phases, High temperature effects
Phase Equilibria Effect on the Enhanced Liquid Phase Sintering of Tungsten—Copper. 2369-2377A

Liquid phases, Pressure effects
Mechanisms of Heterogeneous Nucleation of Pores in Metals and Alloys. 1845-1856A

Liquid phases, Temperature effects
Sn—C and Al—Sn—C Phase Diagrams and Thermodynamic Properties of Carbon in the Alloys: 1550-2300°C. 53-58B
The Glass—Liquid and Solid—Jelly Transition Temperatures. 309-315B
Thermodynamics of Iron—Aluminum Alloys at 1573K. 481-486B
A Thermodynamic Evaluation of the Fe—Mn—N System. 629-645A
Hydrogen Probe Equipped With $SrCeO_3$-Based Proton Conductor and Ca/CaH_2 Reference Electrode. 789-794B
Critical Evaluation and Optimization of the Thermodynamic Properties and Phase Diagrams of the MnO—TiO_2, MgO—TiO_2, FeO—TiO_2, Ti_2O_3—TiO_2, Na_2O—TiO_2, and K_2O—TiO_2 Systems. 795-805B
Critical Evaluation and Optimization of the Thermodynamic Properties and Phase Diagrams of the CaO—Al_2O_3, Al_2O_3—SiO_2, CaO—Al_2O_3—SiO_2 Systems. 807-816B
A Thermodynamic Evaluation of the Fe—Cr—Mn—C System. 1017-1025A
Simulation of Metal Solidification Using a Cellular Automaton. 1045-1053B
Thermochemistry of Binary and Ternary Noble Metal Alloys: the Systems Cu—Ce, Ag—Ce, Au—Ce, Cu—Ag—Au, and Ce—Ag—Au. 1827-1834A
Thermodynamic Analysis and Evaluation of the Fe—Cr—Mn—N System. 2393-2409A
Reactions During Infiltration of Graphite Fibers by Molten Al—Ti Alloy. 2577-2583A
Mechanism of TiC Formation in Al/TiC In Situ Metal-Matrix Composites. 2803-2805A

Liquid phases, Welding effects
Keyhole Formation. 875-880B
Microstructural Characterization of Incoloy 903 Weldments. 1169-1179A

Liquids
See Liquid metals
Melts

Liquidus, Alloying effects
Solubility and Thermodynamic Properties of Li_2O in LiF—CaF_2 Melts. 1031-1035B

Liquidus, Temperature effects
Liquidus Temperatures in the Ti—Al System. 61-66A

Lithium, Alloying elements
Solubility and Thermodynamic Properties of Li_2O in LiF—CaF_2 Melts. 1031-1035B
Compositional Changes in Aluminum—Lithium-Base Alloys Caused by Oxidation. 2279-2288A

Lithium, Reactions (chemical)
The Electrowinning of Lithium From Chloride—Carbonate Melts. 605-615B

Live loads
See Cyclic loads

Lixiviation
See Leaching

Load distribution
See Loads (forces)

Loads (forces)
Deformation-Induced Residual Stress Changes in SiC Whisker-Reinforced 6061 Aluminum Composites. 187-196A
Stress Distribution in Particulate-Reinforced Metal-Matrix Composites Subjected to External Load. 197-207A
Computer Simulation of Martensitic Transformations in Constrained, Two-Dimensional Crystals Under External Stress. 1281-1294B
Fundamental Phenomena Governing Heat Transfer During Rolling. 1307-1320B
Effects of Hydrogen on the Mixed Mode I/III Toughness of a High-Purity Rotor Steel. 1450-1451B
Fatigue Crack Growth Through the Lamellar Microstructure of an Alloy Based on TiAl at 25 and 800°C. 1555-1574A
Evolution of Damage and Plasticity in Titanium-Based, Fiber-Reinforced Composites. 1597-1610A
Microstructural Examination of Fatigue Crack Tip in High Strength Steel. 2209-2216A
Fatigue and Creep—Fatigue Damage of Austenitic Stainless Steels Under Multiaxial Loading. 2247-2261A
Residual Stresses and Their Effects on Deformation in Particle-Reinforced Metal-Matrix Composites. 2487-2496A
Stress-Corrosion Cracking in Equiaxed 7075 Aluminum Under Tension and Torsion Loading. 2569-2575A

Loops (dislocation)
See Dislocation loops

Lorenz number, Field effects
Electromagnetic Force Calculations for a Conical Coil. 737-748B

Lost wax investment casting
See Investment casting

Lost wax process
See Investment casting

Low alloy steels
See also High strength low alloy steels

Low alloy steels, Phase transformations
Computer Simulation of VC Precipitation at Moving γ/α Interfaces. 2195-2207A

Low alloy steels, Steel making
Effects of Processing on the Transverse Fatigue Properties of Low-Sulfur AISI 4140 Steel. 2701-2708A

Low carbon steels, Casting
Evolution of Porosity in Long Freezing Range Alloys. 365-377B

Low carbon steels, Diffusion
An Analytical Model for Solute Redistribution During Solidification of Planar, Columnar, or Equiaxed Morphology. 2107-2118A

Low carbon steels, Heat treatment
Decreased Gas Consumption of a Fluidized Bed Furnace. 889-897B

Low carbon steels, Mechanical properties
Metal-Induced Embrittlement of Low-Carbon Steel by Indium in Association With Tellurium. 504-508A

Low carbon steels, Metal working
Simulated Hot Working, Cold Working, and Annealing of Aluminum-Containing Steels. 1589-1596A

Low cycle fatigue, Composition effects
The Influence of Matrix Microstructure and TiC Reinforcement on the Cyclic Response and Fatigue Behavior of 2219 Aluminum. 2545-2557A

Low cycle fatigue, Cooling effects
The Roles of Rare Earth Dispersoids and Process Route on the Low Cycle Fatigue Behavior of a Rapidly Solidified Powder Metallurgy Titanium Alloy. 1761-1771A

Low cycle fatigue, Deformation effects
An Assessment of Cold Work Effects on Strain-Controlled Low-Cycle Fatigue Behavior of Type 304 Stainless Steel. 913-924A

Low cycle fatigue, Microstructural effects
Scaling Laws for Fatigue Crack Growth of Large Cracks in Steels. 2473-2486A

Luders bands
See Luders lines

Luders lines
Adiabatic Shear Band Formation in Al—SiC_w Composites. 895-900A

Machinability, Alloying effects
Metal-Induced Embrittlement of Low-Carbon Steel by Indium in Association With Tellurium. 504-508A

Machinery and equipment
See Chemical processing equipment
Cylinders
Heat exchangers

Macrofractography
See Fractography

Magnesia
See Magnesium oxide

Magnesium, Alloying elements
Interfacial Phenomena in the Reactions of Aluminum and Al—Ti Melts With KF—AlF_3 and NaF—AlF_3 Melts. 955-961B

Magnesium, Oxidation
Determination of Standard Gibbs Energies of Formation of MgO, SrO. and BaO. 487-492B

Magnesium, Reactions (chemical)
Discussion of "Dissolution Equilibrium of Magnesium Vapor in Liquid Iron". 909-910B

Magnesium, Steel making
The Reduction Mechanism of Chromite in the Presence of a Silica Flux. 987-995B

Magnesium compounds
See also Magnesium oxide

Magnesium compounds, Mechanical properties
Magnesium Silicide Intermetallic Alloys. 2383-2391A

Magnesium oxide, Joining
Thermodynamic Study of the NiO—MgO System in the Temperature Range 1073-1473K by a Galvanic Cell Technique. 1023-1030B

Magnetic domains
Spontaneous Evolution of Microstructure in Materials. 1689-1721A

Magnetic fields
Shape and Stability Computations of Electromagnetically Confined Liquid Metal Boundaries. 171-178B
Electromagnetic Force Calculations for a Conical Coil. 737-748B

Magnetic force
See Magnetic fields

Magnetic structure
See Magnetic domains

Magnetism
See Electromagnetism

Magnets
See Superconducting magnets

Manganese, Alloying additive
Microhardness and Compressive Mechanical Behavior of $L1_2$ Titanium Trialuminides. 935-946A

Manganese, Alloying elements
Motions of Alloying Additions During Furnace Tapping in Steelmaking Processing Operations. 639-648B
Phase Chemistry and Precipitation Reactions in Maraging Steels. IV. Discussion and Conclusions. 1251-1256B

Manganese, Phases (state of matter)
The Effect of Manganese on the Activities of Iron, Nickel, and Chromium in an Fe—Ni—Cr Base Alloy. 2379-2382A

Manganese, Quaternary systems
A Thermodynamic Evaluation of the Fe—Cr—Mn—C System. 1017-1025A
Thermodynamic Analysis and Evaluation of the Fe—Cr—Mn—N System. 2393-2409A

Manganese, Ternary systems
A Thermodynamic Evaluation of the Fe—Mn—N System. 629-645A
A Thermodynamic Evaluation of the Cr—Mn and Fe—Cr—Mn Systems. 1919-1933A

Manganese steels
See also Chromium manganese steels

Manganese steels, Atomic properties
Orientation Relationships Between M_2C Carbide and the Austenite Matrix in an Fe—Mn—Al—Mo—C Alloy. 1057-1065A

Manganese steels, Heat treatment
The Mechanical Stability of Austenite and Cryogenic Toughness of Ferritic Fe—Mn—Al Alloys. 1333-1343B

Manganese steels, Reactions (chemical)
Thermodynamics of Sulfur in BaO—CaO—CO_2 System. 325-331B
Thermodynamic Properties of the BaO—MnO Flux System. 333-337B
Thermodynamics of Phosphorus and Sulfur in the BaO—MnO Flux System Between 1573 and 1673K. 339-347B

Manual metal arc welding
See Shielded metal arc welding

Maraging steels, Heat treatment
Dilatometric Technique for Evaluation of the Kinetics of Solid-State Transformation of Maraging Steel. 2653-2656A

Maraging steels, Phases (state of matter)
Crystallographic Orientation Relationships Among η-Ni_3Ti Precipitate, Reverted Austenite, and Martensitic Matrix in Fe—10Cr—10Ni—2W Maraging Alloy. 2643-2652A

Maraging steels, Structural hardening
Phase Chemistry and Precipitation Reactions in Maraging Steels. I. Introduction and Study of Cobalt-Containing C-300 Steel. 1221-1239B
Phase Chemistry and Precipitation Reactions in Maraging Steels. II. Cobalt-Free T-300 Steel. 1233-1239B
Phase Chemistry and Precipitation Reactions in Maraging Steels. III. Model Alloys. 1241-1249B
Phase Chemistry and Precipitation Reactions in Maraging Steels. IV. Discussion and Conclusions. 1251-1256B
Precipitation Hardening in 350 Grade Maraging Steel. 2429-2442A

Marine atmospheres
See Marine environments

Marine environments
Effect of Microstructure on the Corrosion and Deformation Behavior of a Newly Developed 6Mn—5Cr—1.5Cu Corrosion-Resistant White Iron. 445-457A

Martensite
The Influence of Martensite Shape, Concentration, and Phase Transformation Strain on the Deformation Behavior of Stable Dual-Phase Steels. 301-314A

Martensite, Alloying effects
Martensite Morphology and Fracture Behavior in Intercritically Treated Medium-Carbon 2Si—6N Steel. 508-511A

Martensite, Heating effects
Microstructural Characterisation of Near-α Titanium Alloy Ti—6Al—4Sn—4Zr—0.70Nb—0.50Mo—0.40Si. 1273-1280B
The Mechanical Stability of Austenite and Cryogenic Toughness of Ferritic Fe—Mn—Al Alloys. 1333-1343B
Elastic Limit and Microplastic Response of Hardened Steels. 2263-2277A
Crystallographic Orientation Relationships Among η-Ni_3Ti Precipitate, Reverted Austenite, and Martensitic Matrix in Fe—10Cr—10Ni—2W Maraging Alloy. 2643-2652A

Martensite, Radiation effects
Early Stages of Decomposition in Iron—Carbon and Iron—Nitrogen Martensites: Diffraction Analysis Using Synchrotron Radiation. 1965-1973A

Martensitic stainless steels, Mechanical properties
Scaling Laws for Fatigue Crack Growth of Large Cracks in Steels. 2473-2486A

Martensitic transformations
Toughening Mechanisms in Intermetallics. (Conference Paper) 561-567A
Microstructural Study of Adiabatic Shear Band Formed by Ballistic Impact in an HY-100 Steel. 2217-2224A

Martensitic transformations, Cooling effects
Phase Selection in Undercooled Ti_3Sn Melts. 1481-1496A

Martensitic transformations, Deformation effects
Determination of Heat of Transformation in a Cold-Rolled Martensitic TiNi Alloy. 293-299A

Martensitic transformations, Diffusion effects
Atomic Mechanisms of Diffusional Nucleation and Growth and Comparisons With Their Counterparts in Shear Transformations. 241-276A

Martensitic transformations, Heating effects
Transformation to Ni_5Al_3 in a 63.0 At.% Ni—Al Alloy. 83-94A
Excimer Laser Surface Processing of Ti—6Al—4V. 215-224A
Mathematical Model of Phase Transformations and Elasto—Plastic Stress in the Water Spray Quenching of Steel Bars. 795-808A
Dilatometric Technique for Evaluation of the Kinetics of Solid-State Transformation of Maraging Steel. 2653-2656A

Martensitic transformations, Stress effects
Internal Friction Due to Thermoelastic Martensitic Transformation. 1067-1071A

Martensitic-Transformation Sequence in a $Ti_{50}Ni_{47}Pd_3$ Alloy. 1205-1208A
Computer Simulation of Martensitic Transformations in Constrained, Two-Dimensional Crystals Under External Stress. 1281-1294B
Damping Characteristics of TiNi Shape Memory Alloys. 2189-2194A
Time Dependence of Internal Friction and Shape Change in Cu—Zn—Al Shape Memory Alloys. 2743-2749A

Martensitic transformations, Temperature effects
Thermodynamic Analysis and Evaluation of the Fe—Cr—Mn—N System. 2393-2409A
Discussion of "An Interpretation of the Carbon Redistribution Process During Aging of High-Carbon Martensite" and Authors Reply. 2585-2589A

Mass spectroscopy
See Secondary ion mass spectroscopy

Mass transfer
A Finite Element Modeling Analysis of Flow and Mass Transfer Through Nonspherical Bubbles in a Copper Converter. 617-627B
Experimental Investigations of Dissolution Rates of Carbonaceous Materials in Liquid Iron—Carbon Melts. 629-638B

Master alloys
Study of the Mechanism of Grain Refinement of Aluminum After Additions of Titanium- and Boron-Containing Master Alloys. 481-491A

Materials
See Ceramics
Dissimilar materials
Polymers

Mathematical analysis
See also Numerical analysis
X-Ray Elastic Constants in Textured Zirconium-Base Materials. 389-396A

Mathematical models
Experimental and Theoretical Analysis of Zinc Updraft Sintering. 27-38B
Hydrogen Diffusion and Its Relevance to Intergranular Cracking in Nickel. 105-112A
Calculation of Weld Metal Composition Change in High-Power Conduction Mode Carbon Dioxide Laser-Welded Stainless Steels. 145-155B
A General Model for Leaching of One or More Solid Reactants From Porous Ore Particles. 157-169B
Mathematical Modeling of Postcombustion in a KOBM Converter. 179-188B
Deformation-Induced Residual Stress Changes in SiC Whisker-Reinforced 6061 Aluminum Composites. 187-196A
Entrance Effects on Low Prandtl Number Convection Through a Circular Duct. 197-200B
How Fast Can We Go? The Status of our Knowledge of the Rates of Gas—Liquid Metal Reactions. 241-258B
Model-Based Feedback Control of Deformation Processing With Microstructure Goals. 289-300B
Activities in Cu_2S—FeS—SnS Melts at 1200°C. 301-308B
The Influence of Martensite Shape, Concentration, and Phase Transformation Strain on the Deformation Behavior of Stable Dual-Phase Steels. 301-314A
The Glass—Liquid and Solid—Jelly Transition Temperatures. 309-315B
A Study of Ion Activities in Ionic Solutions. 317-323B
Thermodynamics of Sulfur in BaO—CaO—CO_2 System. 325-331B
Thermodynamics of Phosphorus and Sulfur in the BaO—MnO Flux System Between 1573 and 1673K. 339-347B
A Dislocation Shielding Model for the Fracture of Semibrittle Polycrystals. 343-350A
Mechanisms of Porosity Formation During Solidification: a Theoretical Analysis. 349-364B
Evolution of Porosity in Long Freezing Range Alloys. 365-377B
Modeling of Steel Grade Transition in Continuous Slab Casting Processes. 379-393B
An Analytical Description for the Deformation Response of Ni_3Al Alloys in the Anomalous Regime. 397-401A
Thermodynamics of the Zinc—Sulfur Dioxide—Water System. 409-417B
Desulfurization of Bath Smelter Metal. 441-447B
Experimental Investigation of the Phenomenon of Centrifuging of Liquids. 463-473B
Application of a Nonisothermal Thermogravimetric Method to the Kinetic Study of the Reduction of Metallic Oxides. II. A Theoretical Treatment of Powder Bed Reduction and Its Application to the Reduction of Tungsten Oxide by Hydrogen. 475-480B
Thermodynamics of Iron—Aluminum Alloys at 1573K. 481-486B
Determination of Standard Gibbs Energies of Formation of MgO, SrO, and BaO. 487-492B
A Two-Dimensional Heat and Fluid-Flow Model of Single-Roll Continuous-Sheet Casting Process. 521-535B
A Dislocation Shielding Prediction of the Toughness Transition During Cleavage of Semibrittle Crystals. (Conference Paper) 535-543A
A Stereological Formulation for the Source Team in Micromodels of Equiaxed Eutectic Solidification. 539-542B
Solidification of Pure Metal in Imperfect Contact With a Mold. 542-544B
Leaching of Cu_2O With Aqueous Solution of Sulfur Dioxide. 563-570B
Accretion Growth on Single-Pipe Tuyeres. I. Model Development and Preliminary Analysis. 571-582B
Deoxidation of Molten Titanium by Electron-Beam Remelting Technique. 599-604B
The Electrowinning of Lithium From Chloride—Carbonate Melts. 605-615B
A Finite Element Modeling Analysis of Flow and Mass Transfer Through Nonspherical Bubbles in a Copper Converter. 617-627B
A Thermodynamic Evaluation of the Fe—Mn—N System. 629-645A
Motions of Alloying Additions During Furnace Tapping in Steelmaking Processing Operations. 639-648B
Surface and Interfacial Tension of the Ni—Fe—S, Ni—Cu—S, and Fayalite Slag Systems. 657-668B
The Nature and Influence of Convection on the Directional Dendritic Solidification of a Metal Alloy Analog, NH_4Cl, and H_2O. 669-675B
Numerical Simulation of Solidification of Molten Aluminum Alloys in Cylindrical Molds. 677-684B
Real-Time Simulation of Heat Transfer in Continuous Casting. 685-693B
Measurement and Modeling of Turbulence in the Gas/Liquid Two-Phase Zone During Gas Injection. 695-705B
Determination of Diffusion Coefficients of Strontium in Liquid Aluminum. 707-709B
Measurement of Electronic Conduction in Cryolite Alumina Melts and Estimation of Its Effect on Current Efficiency. 729-735B
Electromagnetic Force Calculations for a Conical Coil. 737-748B
Calculation of Dendrite Settling Velocities Using a Porous Envelope. 749-753B
Inclusion Behavior and Heat-Transfer Phenomena in Steelmaking Tundish Operations. I. Aqueous Modeling. 755-765B
Inclusion Behavior and Heat-Transfer Phenomena in Steelmaking Tundish Operations. II. Mathematical Model for Liquid Steel in Tundishes. 767-777B
Inclusion Behavior and Heat-Transfer Phenomena in Steelmaking Tundish Operations. III. Applications—Computational Approach to Tundish Design. 779-788B
Critical Evaluation and Optimization of the Thermodynamic Properties and Phase Diagrams of the MnO—TiO_2, MgO—TiO_2, FeO—TiO_2, Ti_2O_3—TiO_2, Na_2O—TiO_2, and K_2O—TiO_2 Systems. 795-805B
Mathematical Model of Phase Transformations and Elasto—Plastic Stress in the Water Spray Quenching of Steel Bars. 795-808A
Critical Evaluation and Optimization of the Thermodynamic Properties and Phase Diagrams of the CaO—Al_2O_3, Al_2O_3—SiO_2, CaO—Al_2O_3—SiO_2 Systems. 807-816B
Calculation of Sulfide Capacities of Multicomponent Slags. 817-825B
Oxygen Deleading of Lead—Bismuth Alloys. 839-846B
Oxygen and Sulfur Solubilities in Ni—Fe—S—O Melts. 847-856B
Keyhole Formation. 875-880B
Stability of Metal/Electrolyte Interface in Hall—Héroult Cells: Effect of the Steady Velocity. 899-906B
Determination of Standard Gibbs Energy of Formation of Ca_3N_2. 907-909B
Discussion of "Dissolution Equilibrium of Magnesium Vapor in Liquid Iron". 909-910B
Empowerment With Knowledge—Toward the Intelligent Mold for the Continuous Casting of Steel Billets. 917-935B
Modeling of Solute Redistribution in the Mushy Zone During Solidification of Aluminum—Copper Alloys. 963-973A
Thermodynamic Activity of Antimony at Dilute Solutions in Carbon-Saturated Liquid Iron. 963-973B
Electrical Conductivity in Directionally Solidified Pb—9Cu and Pb—20Cu Alloys. 975-979A
The Ignition and Combustion of Chalcopyrite Concentrate Particles Under Suspension-Smelting Conditions. 975-985B
Large Deformation Simple Compression of a Copper Single Crystal. 989-992A
Measurement of Velocity in High-Temperature Liquid Metals. 1009-1022B
A Thermodynamic Evaluation of the Fe—Cr—Mn—C System. 1017-1025A
Thermodynamic Study of the NiO—MgO System in the Temperature Range 1073-1473K by a Galvanic Cell Technique. 1023-1030B
Solubility and Thermodynamic Properties of Li_2O in LiF—CaF_2 Melts. 1031-1035B
Thermodynamic Properties of Zinc-Rich Zinc—Aluminum Melts. 1037-1044B
Simulation of Metal Solidification Using a Cellular Automaton. 1045-1053B
The Effect of Sodium and Strontium Modification on Surface Tension and Volumetric Shrinkage of A356 Alloy and Their Influence on Porosity Formation. 1055-1063B
Internal Friction Due to Thermoelastic Martensitic Transformation. 1067-1071A
Potassium Bubbles in Tungsten Wire. 1073-1084A
A Mathematical Model for Heap Leaching of One or More Solid Reactants From Porous Ore Pellets. 1087-1102B
Shear Rate Thickening Flow Behavior of Semisolid Slurries. 1107-1116A
Residual Strain Gradient Determination in Metal Matrix Composites by Synchrotron X-Ray Energy Dispersive Diffraction. 1117-1124A
The Composition of the Solid Solution, Structure, and Contact Fatigue of the Case-Hardened Layer. 1163-1168A
Computer Simulation of Martensitic Transformations in Constrained, Two-Dimensional Crystals Under External Stress. 1281-1294B
A Transgranular Fatigue Crack Growth Model Based on Restricted Slip Reversibility. 1373-1380B
A Stereological Model of the Degree of Grain Boundary-Pore Contact During Sintering. 1497-1505A
A New Model for Diffusional Growth With Nonequilibrium Interface Conditions. 1507-1516A
General Model of a Gas Transport Through Solid Porous Membranes. 1527-1530A
Failure Diagrams for Unidirectional Fiber Metal-Matrix Composites. 1531-1542A
Correction to "Failure Diagrams for Unidirectional Fiber Metal-Matrix Composites". 1531-1542A
Influence of Strain Rate on Interpass Softening During the Simulated Warm Rolling of Interstitial-Free Steels. 1543-1553A
Fatigue Crack Growth Through the Lamellar Microstructure of an Alloy Based on TiAl at 25 and 800°C. 1555-1574A
Particulate Fracture During Deformation of a Spray Formed Metal-Matrix Composite. 1575-1588A
On the Anchoring of Solids at Curved Fluid Interfaces. 1673-1677A
Correction to "On the Anchoring of Solids at Curved Fluid Interfaces". 1673-1677A
Direct Viscoelastic Strain Relaxation Measurements With Interference Microscopy: Analysis of Sheet Metal Polymer Coatings. 1678-1681A

Spontaneous Evolution of Microstructure in Materials. 1689-1721A
Misfit Accommodation in a Quenched and Aged Al—Cu Alloy With Silicon Particles. 1723-1731A
The Dendritic Growth of γ' Precipitates and Grain Boundary Serration in a Model Nickel-Base Superalloy. 1733-1743A
A Model for the Thermal Properties of Liquid-Phase Sintered Composites. 1745-1752A
Densification and Deformation Behavior of a Porous Metal Strip During Hot Rolling. 1753-1760A
Small Fatigue Crack Behavior in 7075-T651 Aluminum as Monitored With Rayleigh Wave Reflection. 1773-1783A
General Aspects of the Thermomechanical Treatment of Two-Phase Intermetallic TiAl Compounds. 1795-1806A
Thermochemistry of Binary and Ternary Noble Metal Alloys: the Systems Cu—Ce, Ag—Ce, Au—Ce, Cu—Ag—Au, and Ce—Ag—Au. 1827-1834A
Mechanisms of Heterogeneous Nucleation of Pores in Metals and Alloys. 1845-1856A
The Reduced Pressure Test as a Measuring Tool in the Evaluation of Porosity/Hydrogen Content in Al—7 wt.% Si—10 vol.% SiC(p) Metal Matrix Composite. 1857-1868A
Creep Behavior of an Al-2.0 Wt.%.Li Alloy in the Temperature Range 300-500°C. 2001-2007A
Theoretical Calculation of Anisotropic Creep and Stress—Strain Behavior for a Class of Metal-Matrix Composites. 2049-2059A
Residual Stress Measurements by X-Ray Diffraction in the Ferritic/Austenitic Interface Weldment. 2095-2106A
An Analytical Model for Solute Redistribution During Solidification of Planar, Columnar, or Equiaxed Morphology. 2107-2118A
Incomplete Reaction Phenomenon in High Strength Bainitic Steels. 2145-2150A
Effect of Deformation Parameters on the No-Recrystallization Temperature in Niobium-Bearing Steels. 2151-2159A
Effects of Silicon Addition on the First Stage of Precipitation in the Al—1.52% Cu—0.75% Mg Alloy. 2181-2187A
Computer Simulation of VC Precipitation at Moving γ/α Interfaces. 2195-2207A
A Theoretical Evaluation of Crack Closure. 2225-2232A
New Explosive Welding Technique to Weld Aluminum Alloy and Stainless Steel Plates Using a Stainless Steel Intermediate Plate. 2289-2297A
Determination of the Total Texture Function From Individual Orientation Measurements by Electron Backscattering Pattern. 2299-2311A
A Model for the Graphite Formation in Ductile Cast Iron. I. Inoculation Mechanisms. 2321-2345A
A Model for the Graphite Formation in Ductile Cast Iron. II. Solid State Transformation Reactions. 2347-2353A
Electrical Conductivity and Microstructure of Aluminum Alloys. 2355-2358A
Improved Model to Predict Properties of Aluminum Alloy Products After Continuous Cooling. 2417-2427A
Design and Development of Hot Corrosion-Resistant Nickel-Base Single-Crystal Superalloys by the d-Electrons Alloy Design Theory. II. Effects of Refractory Metals Titanium, Tantalum, and Niobium on Microstructures and Properties. 2451-2464A
Modeling of Particle Size Evolution During Mechanical Milling. 2465-2471A
Scaling Laws for Fatigue Crack Growth of Large Cracks in Steels. 2473-2486A
Calculations of Forming Limit Diagrams for Changing Strain Paths. 2497-2501A
Effect of Changing Strain Paths on Forming Limit Diagrams of Aluminum 2008-T4. 2503-2512A
Reactions During Infiltration of Graphite Fibers by Molten Al—Ti Alloy. 2577-2583A
Temperature Dependence of Strain Hardening in a Dispersion-Strengthened Al—Fe—V—Si Alloy. 2589-2593A
Transformation Path Dependence of the Bain Strain Relaxation During Decomposition of a Hypereutectoid CuBe Alloy. 2605-2611A
Effect of Stretching on the Precipitation Kinetics of an Al—2.0Li—2.8Cu—0.5Mg(—0.13Zr) Alloy. 2613-2621A
Calorimetrically Measured Enthalpies for the Reaction of Hafnium With $H(D)_2$ (g). 2623-2627A
Dilatometric Technique for Evaluation of the Kinetics of Solid-State Transformation of Maraging Steel. 2653-2656A
Continuous Cooling Deformation Testing of Steels. 2657-2665A
Numerical Simulation of the Infiltration of Fibrous Preforms by a Pure Metal. 2667-2678A
Strain Path Change Effects in the Local Necking of Aluminum Sheet and in the Tension of Internally Pressurized Tubes. 2691-2699A
Effects of Processing on the Transverse Fatigue Properties of Low-Sulfur AISI 4140 Steel. 2701-2708A
Precipitation Hardening in Nickel—Copper Base Alloy Monel K500. 2709-2719A
Time Dependence of Internal Friction and Shape Change in Cu—Zn—Al Shape Memory Alloys. 2743-2749A
A Multiphase Solute Diffusion Model for Dendritic Alloy Solidification. 2787-2802A

Mathematics
See Finite element method
Mathematical analysis
Mathematical models

Mechanical alloying
Milling Dynamics. I. Attritor Dynamics: Results of a Cinematographic Study. 175-185A
Combustion Reaction of $Ni_{40}Ti_{60}$ During Mechanical Alloying in Oxygen Atmosphere. 225-227A
The Kinetics of Composite Particle Formation During Mechanical Alloying. 647-657A
Ductile Fracture of Mechanically Alloyed Iron—Yttria Alloys. 681-687A
Crystallographic Texture in Mechanically Alloyed Oxide Dispersion-Strengthened MA956 and MA957 Steels. 773-779A
Nonuniform Recrystallization in a Mechanically Alloyed Nickel-Base Superalloy. 1049-1055A
Modeling of Particle Size Evolution During Mechanical Milling. 2465-2471A

Mechanical properties
See Brittleness
Creep (materials)
Deformation resistance
Ductile brittle transition
Ductility
Elastic constants
Elasticity
Fatigue (materials)
Fracture strength
Hardness
Impact strength
Plasticity
Shear properties
Strain
Tensile properties
Thermoelastic properties
Toughness
Wear resistance

Mechanical tests
See Creep tests
Fatigue tests
Hardness tests
Tension tests

Mechanics
See Fracture mechanics

Medium carbon steels, Casting
Empowerment With Knowledge—Toward the Intelligent Mold for the Continuous Casting of Steel Billets. 917-935B

Medium carbon steels, Heat treatment
Mathematical Model of Phase Transformations and Elasto—Plastic Stress in the Water Spray Quenching of Steel Bars. 795-808A
Elastic Limit and Microplastic Response of Hardened Steels. 2263-2277A

Medium carbon steels, Mechanical properties
Martensite Morphology and Fracture Behavior in Intercritically Treated Medium-Carbon 2Si—6N Steel. 508-511A

Melt spinning
Heterogeneous Nucleation of Solidification of Silicon by Solid Aluminum in Hypoeutectic Al—Si Alloy. 1195-1204A

Melting
See also Electron beam melting
Induction melting
Laser beam melting
Melting of Secondary-Phase Particles in Al—Mg—Si Alloys. 2629-2641A

Melting points
Development of an Induction Melting Process for Materials With Low Electrical Conductivity or High Melting Point. 259-264B
Evolution of Porosity in Long Freezing Range Alloys. 365-377B
Metal-Induced Embrittlement of Low-Carbon Steel by Indium in Association With Tellurium. 504-508A
Solidification of Pure Metal in Imperfect Contact With a Mold. 542-544B
Simulation of Metal Solidification Using a Cellular Automaton. 1045-1053B
Thermochemistry of Binary and Ternary Noble Metal Alloys: the Systems Cu—Ce, Ag—Ce, Au—Ce, Cu—Ag—Au, and Ce—Ag—Au. 1827-1834A

Melting points, Temperature effects
The Glass—Liquid and Solid—Jelly Transition Temperatures. 309-315B

Melts
See also Liquid metals

Melts, Reduction (chemical)
Experimental Investigations of Dissolution Rates of Carbonaceous Materials in Liquid Iron—Carbon Melts. 629-638B

Memory (shape)
See Shape memory

Metal carbides
See Titanium carbide
Vanadium carbide

Metal scrap
See Steel scrap

Metal vapors, Reactions (chemical)
Discussion of "Dissolution Equilibrium of Magnesium Vapor in Liquid Iron". 909-910B

Metal working
See Cold working
Forming
Thermomechanical treatment

Metallic compounds
See Intermetallics

Metallographic structures
See Microstructure

Metallography
See Crystallography

Metalloids
See Boron
Carbon
Germanium
Silicon
Tellurium

Metallurgical analysis
See Qualitative analysis
Quantitative analysis

Metallurgical constituents
See Ferrite
Laves phase

Metallurgy
See Powder metallurgy

Metals
See Dissimilar metals
FCC metals
Liquid metals

Metastable phases
Metastable Crystalline and Amorphous Structures Formed in the Cu—W System by Vapor Deposition. 1027-1037A

Metastable phases, Alloying effects
Unusual Morphology of the Omega Phase in a Zirconium—1.75 at.% Nickel Alloy. 495-501A

Metastable phases, Composition effects
Measurement of Solid Solubility of Germanium in Aluminum. 277-282A

Metastable phases, Cooling effects
Study of the Mechanism of Grain Refinement of Aluminum After Additions of Titanium- and Boron-Containing Master Alloys. 481-491A
Interfacial Phenomena in the Reactions of Al—B, Al—Ti—B, and Al—Zr—B Alloys With KF—AlF_3 and NaF—AlF_3 Melts. 947-953B
Phase Selection in Undercooled Ti_3Sn Melts. 1481-1496A
Transformation Path Dependence of the Bain Strain Relaxation During Decomposition of a Hypereutectoid CuBe Alloy. 2605-2611A

Metastable phases, Deformation effects
An Investigation of Superplasticity in a Thermomechanically Processed U—6Nb ($\alpha + \gamma_2$) Alloy. 379-388A

Metastable phases, pH effects
Thermodynamics of the Zinc—Sulfur Dioxide—Water System. 409-417B

Metastable phases, Radiation effects
Early Stages of Decomposition in Iron—Carbon and Iron—Nitrogen Martensites: Diffraction Analysis Using Synchrotron Radiation. 1965-1973A

Metathesis
See Decomposition reactions

Microalloyed steels
See High strength low alloy steels

Microalloying
Microstructure and Mechanical Behavior of Al—Li—Cu—Mg Alloy 8090 Microalloyed With Vanadium and Beryllium. 95-104A

Microbial leaching
See Bacterial leaching

Microcracking
See Crack initiation

Microfractography
See Fractography

Microhardness
Metastable Crystalline and Amorphous Structures Formed in the Cu—W System by Vapor Deposition. 1027-1037A

Microhardness, Coating effects
Direct Viscoelastic Strain Relaxation Measurements With Interference Microscopy: Analysis of Sheet Metal Polymer Coatings. 1678-1681A

Microhardness, Deformation effects
Determination of Heat of Transformation in a Cold-Rolled Martensitic TiNi Alloy. 293-299A

Microhardness, Heating effects
Surface Hardening of Ti—6Al—4V Alloy by Electrochemical Hydrogenation. 1181-1185A

Microhardness, High temperature effects
Phase Equilibria Effect on the Enhanced Liquid Phase Sintering of Tungsten—Copper. 2369-2377A
Magnesium Silicide Intermetallic Alloys. 2383-2391A

Microhardness, Microstructural effects
Microstructural Study of Adiabatic Shear Band Formed by Ballistic Impact in an HY-100 Steel. 2217-2224A

Microhardness, Radiation effects
Microstructural Characterization and *In Situ* Transmission Electron Microscopy Analysis of Laser-Processed and Thermally Treated Fe—Cr—W—C Clad Coatings. 1621-1629A

Microscopy
See Field ion microscopy

Microshrinkage
See Shrinkage

Microstructure
See also Amorphous structure
Crystal structure
Dislocation density
Grain orientation
Grain size
Grain structure
Graphitic structure
Heterogeneous structure
Homogeneous structure
Lamellar structure
Texture
Reaction Sintering of Cold-Extruded Elemental Powder Mixture Ti—48Al. 1517-1526A

Microstructure, Alloying effects
Environmentally Assisted Cracking of Two-Phase Iron—Manganese—Aluminum Alloys in NaCl Solution. 459-464A
Unusual Morphology of the Omega Phase in a Zirconium—1.75 at.% Nickel Alloy. 495-501A
The Effect of Nickel, Chromium, and Primary Alpha Phase on the Creep Behavior of Ti—6242Si. 1819-1826A
Design and Development of Hot Corrosion-Resistant Nickel-Base Single-Crystal Superalloys by the d-Electrons Alloy Design Theory. II. Effects of Refractory Metals Titanium, Tantalum, and Niobium on Microstructures and Properties. 2451-2464A

Microstructure, Composition effects
Hydrogen Tolerance of a Ti_3Al-Based Alloy. 1095-1106A

Microstructure, Cooling effects
Continuous Cooling Deformation Testing of Steels. 2657-2665A

Microstructure, Deformation effects
Simulated Hot Working, Cold Working, and Annealing of Aluminum-Containing Steels. 1589-1596A

Microstructure, Environmental effects
The Reduced Pressure Test as a Measuring Tool in the Evaluation of Porosity/Hydrogen Content in Al—7 wt.% Si—10 vol.% SiC(p) Metal Matrix Composite. 1857-1868A

Microstructure, Heating effects
The Effect of the Precipitation of Coherent and Incoherent Precipitates on the Ductility and Toughness of High-Strength Steel. 127-139A
Excimer Laser Surface Processing of Ti—6Al—4V. 215-224A
Composition and Stability of Ω Phase in an Al—Cu—Mg—Ag Alloy. 1461-1470A
Morphological Effect on the Mechanical Behavior of a Two-Phase Ti_3Al—Nb Alloy. 1785-1793A
Microstructural Changes in As-Cast M2 Grade High Speed Steel During Hot Forging. 2171-2180A
Dilatometric Technique for Evaluation of the Kinetics of Solid-State Transformation of Maraging Steel. 2653-2656A

Microstructure, High temperature effects
Strain-Rate Effects on High-Temperature Fracture Behavior of a 2124Al—SiC_w Composite. 1125-1131A

Microstructure, Impurity effects
Effect of Sulfur Content on the Microstructure and Toughness of Simulated Heat-Affected Zone in Titanium-Killed Steels. 1399-1408B

Microstructure, Stress effects
Small Fatigue Crack Behavior in 7075-T651 Aluminum as Monitored With Rayleigh Wave Reflection. 1773-1783A
The Effects of Combined Strain-Path and Strain-Rate Changes in Aluminum. 2679-2689A
The Influence of Matrix Microstructure and Particle Reinforcement on the Creep Behavior of 2219 Aluminum. 2731-2741A

Microstructure, Welding effects
New Explosive Welding Technique to Weld Aluminum Alloy and Stainless Steel Plates Using a Stainless Steel Intermediate Plate. 2289-2297A

Migration
See Diffusion

Mild carbon steels
See Low carbon steels

Mild steels
See Carbon steels

Minerals beneficiation
See Beneficiation

Mining
A Mathematical Model for Heap Leaching of One or More Solid Reactants From Porous Ore Pellets. 1087-1102B

Mixing
See Mechanical alloying

Mobility
See Dislocation mobility
Ionic mobility

Modulus of elasticity
Springback in Simple Axisymmetric Stampings. 925-934A

Modulus of elasticity, Alloying effects
Microstructure and Mechanical Behavior of Al—Li—Cu—Mg Alloy 8090 Microalloyed With Vanadium and Beryllium. 95-104A
Boron and Off-Stoichiometry Effects on the Strength and Ductility of AlRu. 227-230A

Modulus of elasticity, Composition effects
Damping Behavior of 6061Al/Gr Metal Matrix Composites. 701-712A

Modulus of elasticity, Deformation effects
Creep Behavior of an Al-2.0 Wt.%.Li Alloy in the Temperature Range 300-500°C. 2001-2007A

Modulus of elasticity, High temperature effects
Mechanical and Oxidation Properties of AlRu-Based High-Temperature Alloys. 759-763A
Magnesium Silicide Intermetallic Alloys. 2383-2391A

Modulus of elasticity, Microstructural effects
Microstructure-Property Relationships in Low-Density Al—Li—Mg Alloys. 853-863A
Scaling Laws for Fatigue Crack Growth of Large Cracks in Steels. 2473-2486A

Modulus of elasticity, Stress effects
Deformation-Induced Residual Stress Changes in SiC Whisker-Reinforced 6061 Aluminum Composites. 187-196A

Failure Diagrams for Unidirectional Fiber Metal-Matrix Composites. 1531-1542A
Correction to "Failure Diagrams for Unidirectional Fiber Metal-Matrix Composites". 1531-1542A
On the Development of Constitutive Relations for Metallic Powders. 2071-2081A
Damping Characteristics of TiNi Shape Memory Alloys. 2189-2194A

Modulus of rigidity
See Shear modulus

Modulus of shear
See Shear modulus

Modulus of torsion
See Shear modulus

Moistening
See Wetting

Molds, Thermal properties
Solidification of Pure Metal in Imperfect Contact With a Mold. 542-544B

Molten metals
See Liquid metals

Molybdenum, Alloying elements
Unusual Morphology of the Omega Phase in a Zirconium—1.75 at.% Nickel Alloy. 495-501A
Phase Chemistry and Precipitation Reactions in Maraging Steels. IV. Discussion and Conclusions. 1251-1256B
As-Cast Carbides in High-Speed Steels. 1265-1272B
A New Orientation Relationship Between M_6C Carbide and the Austenite Matrix in an Fe—Mn—Al—Mo—C Alloy. 1671-1673A

Molybdenum, Ternary systems
An Experimental Study and Thermodynamic Evaluation of the Fe—Mo—Ti System at 1000°C. 2137-2144A

Molybdenum chromium steels
See Chromium molybdenum steels

Molybdenum compounds, Composite materials
On the Flow Behavior of Constrained Ductile Phases. 403-415A
Strength, Fracture, and Fatigue Behavior of Advanced High-Temperature Intermetallics Reinforced With Ductile Phases. (Conference Paper) 585-600A

Molybdenum compounds, Synthesis
Standard Enthalpies of Formation of NbB_2, MoB, and ReB_2 by High-Temperature Direct Synthesis Calorimetry. 947-950A

Molybdenum steels
See Chromium molybdenum steels

Monel
See Nickel base alloys

Monocrystals
See Single crystals

Mossbauer spectroscopy
A Mössbauer Study of the Behavior of Iron Cations in Iron Oxide-Containing Melts at 1400°C. 101-111B
^{197}Au Mössbauer Study of Copper Refinery Anode Slimes. 457-462B

Moulds
See Molds

Multiaxial stress
See Axial stress

Muriatic acid
See Hydrochloric acid

Natural aging
See Aging (natural)

Near net shaping
An Analysis of Deformation, Temperature, and Microstructure for Hot-Extruded Titanium Alloy. 139-144B
A Two-Dimensional Heat and Fluid-Flow Model of Single-Roll Continuous-Sheet Casting Process. 521-535B
Selective Laser Sintering of Intermetallics. 757-759A
Shear Rate Thickening Flow Behavior of Semisolid Slurries. 1107-1116A

Near net shaping, Cooling effects
Spray Deposition of a Sn—40 wt.% Pb Alloy With Uniform Droplets. 1187-1193A

Near net shaping, Field effects
Shape and Stability Computations of Electromagnetically Confined Liquid Metal Boundaries. 171-178B

Necking, Pressure effects
Strain Path Change Effects in the Local Necking of Aluminum Sheet and in the Tension of Internally Pressurized Tubes. 2691-2699A

Necking, Stress effects
Numerical Analysis of the Hot Tension Test. 2039-2047A

Necking, Temperature effects
Temperature-Induced Transition in Ductile Fracture Appearance of a Nitrogen-Strengthened Austenitic Stainless Steel. 2521-2529A

Neodymium, Extraction
Characterization of Neodymium Oxalate Precipitated From 2-Ethylhexyl Phosphonic Acid Mono-2-Ethylhexyl Ester Solution. 537-538B

Nickel, Alloying elements
Unusual Morphology of the Omega Phase in a Zirconium—1.75 at.% Nickel Alloy. 495-501A
Martensite Morphology and Fracture Behavior in Intercritically Treated Medium-Carbon 2Si—6N Steel. 508-511A
Phase Chemistry and Precipitation Reactions in Maraging Steels. IV. Discussion and Conclusions. 1251-1256B
The Effect of Nickel, Chromium, and Primary Alpha Phase on the Creep Behavior of Ti—6242Si. 1819-1826A

Nickel, Composite materials
Synthesis of Bulk and Reinforced Nickel Aluminides by Reactive Infiltration. 2161-2170A

Nickel, Extraction
Quantitative Method for Silica Flux Evaluation. 63-73B
The Separation of Nickel and Cobalt in a Mixed Sulfide Precipitate. 189-192B
Accretion Growth on Single-Pipe Tuyeres. I. Model Development and Preliminary Analysis. 571-582B
Oxygen and Sulfur Solubilities in Ni—Fe—S—O Melts. 847-856B

Nickel, Joining
Thermodynamic Study of the NiO—MgO System in the Temperature Range 1073-1473K by a Galvanic Cell Technique. 1023-1030B

Nickel, Mechanical properties
Hydrogen Diffusion and Its Relevance to Intergranular Cracking in Nickel. 105-112A

Nickel, Powder technology
Reduction Kinetics of $Ni(OH)_2$ to Nickel Powder Preparation Under Hydrothermal Conditions. 557-561B

Nickel, Reduction (chemical)
Surface and Interfacial Tension of the Ni—Fe—S, Ni—Cu—S, and Fayalite Slag Systems. 657-668B

Nickel, Rolling
Densification and Deformation Behavior of a Porous Metal Strip During Hot Rolling. 1753-1760A
Microstructural Evolution in Nickel During Rolling From Intermediate to Large Strains. 2021-2037A

Nickel base alloys, Casting
Three-Dimensional Probabilistic Simulation of Solidification Grain Structures: Application to Superalloy Precision Castings. 467-479A

Nickel base alloys, Corrosion
Design and Development of Hot Corrosion-Resistant Nickel-Base Single Crystal Superalloys by the d-Electrons Alloy Design Theory. I. Characterization of the Phase Stability. 2443-2450A
Design and Development of Hot Corrosion-Resistant Nickel-Base Single-Crystal Superalloys by the d-Electrons Alloy Design Theory. II. Effects of Refractory Metals Titanium, Tantalum, and Niobium on Microstructures and Properties. 2451-2464A

Nickel base alloys, Diffusion
An Analytical Model for Solute Redistribution During Solidification of Planar, Columnar, or Equiaxed Morphology. 2107-2118A

Nickel base alloys, Forging
Computer Simulation of the Forging of Fine Grain IN-718 Alloy. 2061-2071A

Nickel base alloys, Heat treatment
Nonuniform Recrystallization in a Mechanically Alloyed Nickel-Base Superalloy. 1049-1055A
The Dendritic Growth of γ' Precipitates and Grain Boundary Serration in a Model Nickel-Base Superalloy. 1733-1743A
The Morphological Changes of γ' Precipitates in a Ni—8Al (st.%) Alloy During Their Coarsening. 1975-1981A

Nickel base alloys, Mechanical properties
Damping Characteristics of TiNi Shape Memory Alloys. 2189-2194A
The Effect of Grain Size and Strain Rate On the Substructures and Mechanical Properties in Nickel 200. 2559-2568A

Nickel base alloys, Metal working
Auger Electron Spectroscopy Study of Grain Boundary Segregation in Alloy K-500. II. Behavior in Slow Strain Rate Tensile Test. 1909-1917A

Nickel base alloys, Phase transformations
Transformation to Ni_5Al_3 in a 63.0 At.% Ni—Al Alloy. 83-94A

Nickel base alloys, Phases (state of matter)
Formation of $L1_2$-Structured Ni_3Si. 283-292A

Nickel base alloys, Rolling
Determination of Heat of Transformation in a Cold-Rolled Martensitic TiNi Alloy. 293-299A

Nickel base alloys, Structural hardening
Auger Electron Spectroscopy Study of Grain Boundary Segregation in Alloy K-500. I. Behavior in As-Processed State. 1897-1907A
Precipitation Hardening in Nickel—Copper Base Alloy Monel K500. 2709-2719A

Nickel base alloys, Welding
Microstructural Characterization of Incoloy 903 Weldments. 1169-1179A
The Effect of Weld Heat-Affected Zone (HAZ) Liquation Kinetis on the Hot Cracking Susceptibility of Alloy 718. 1409-1422B
Kinetics of Grain Growth in the Weld Heat-Affected Zone of Alloy 718. 2773-2785A

Nickel chromium steels, Heat treatment
Mathematical Model of Phase Transformations and Elasto—Plastic Stress in the Water Spray Quenching of Steel Bars. 795-808A

Nickel compounds, Composite materials
Toughening Mechanisms in Intermetallics. (Conference Paper) 561-567A
The Mechanical Behavior of Directionally Solidified Al—Ni in Compression. 713-719A
Interfacial Shear Strength of Cast and Directionally Solidified NiAl—Sapphire Fiber Composites. 2119-2125A
Creep Regimes for Directionally Solidified Al—Al_3Ni Eutectic Composite. 2721-2730A

Nickel compounds, Extrusion
The Role of Microstructure on Strength and Ductility of Hot-Extruded Mechanically Alloyed NiAl. 1993-2000A

Nickel compounds, Mechanical properties
High-Temperature Creep of the Intermetallic Alloy Ni_3Al. 335-341A

An Analytical Description for the Deformation Response of Ni_3Al Alloys in the Anomalous Regime. 397-401A
Surface Preparation and Bend Ductility of NiAl. 2593-2596A

Nickel compounds, Metallography
Fracture Morphology of NiAl Single Crystals Tested in Tension. 1363-1371B

Nickel compounds, Powder technology
Selective Laser Sintering of Intermetallics. 757-759A

Nickel iron
Gaseous Reduction of Laterite Ores. 271-295B

Nickel ores, Reduction (chemical)
Gaseous Reduction of Laterite Ores. 271-295B

Nickel steels
See Nickel chromium steels

Niobium, Alloying elements
Strength and Electrical Conductivity of a Deformation-Processed Cu—5 vol.% Nb Composite. (Conference Paper) 7-14A
High-Strength High-Conductivity Cu—Nb Microcomposite Sheet Fabricated via Multiple Roll Bonding. (Conference Paper) 15-20A
Deformation-Processed Wire Prepared From Gas-Atomized Cu—Nb Alloy Powders. (Conference Paper) 21-26A
The Effect of Annealing on the Microstructure and Mechanical Properties of Cu—X Microcomposites. (Conference Paper) 27-34A
Effect of Ti/Al Ratio and Chromium, Niobium, and Hafnium Additions on Material Factors and Mechanical Properties in TiAl. 141-150A
Motions of Alloying Additions During Furnace Tapping in Steelmaking Processing Operations. 639-648B
The Kinetics of Composite Particle Formation During Mechanical Alloying. 647-657A
The Effect of Trace-Titanium Content on the Solubility of Niobium and the Consequent Properties of Niobium-Bearing Steels. 2127-2130A
Design and Development of Hot Corrosion-Resistant Nickel-Base Single-Crystal Superalloys by the d-Electrons Alloy Design Theory. II. Effects of Refractory Metals Titanium, Tantalum, and Niobium on Microstructures and Properties. 2451-2464A

Niobium, Composite materials
On the Flow Behavior of Constrained Ductile Phases. 403-415A
Strength, Fracture, and Fatigue Behavior of Advanced High-Temperature Intermetallics Reinforced With Ductile Phases. (Conference Paper) 585-600A

Niobium, Oxidation
Determination of Standard Gibbs Energies of Formation of MgO, SrO, and BaO. 487-492B

Niobium, Powder technology
Modeling of Particle Size Evolution During Mechanical Milling. 2465-2471A

Niobium base alloys, Mechanical properties
Strength and Toughness of a Nb/Nb_5Si_3 Composite. 501-504A

Niobium compounds, Composite materials
Strength, Fracture, and Fatigue Behavior of Advanced High-Temperature Intermetallics Reinforced With Ductile Phases. (Conference Paper) 585-600A
Microstructural Toughening Mechanisms in γ-TiAl · 20% TiCb as Determined by FRASTA. 883-894A

Niobium compounds, Synthesis
Standard Enthalpies of Formation of NbB_2, MoB, and ReB_2 by High-Temperature Direct Synthesis Calorimetry. 947-950A

Nitric acid leaching
Kinetics of the Dissolution of Pure Silver and Silver—Gold Alloys in Nitric Acid Solution. 827-837B

Nitrides
See also Silicon nitride

Nitrides, Surface properties
Four Wetting Phases in AlN/Al and AlN Composites/Al Systems, Models of Nonreactive, Reactive, and Composite Systems. 1391-1397B

Nitrogen, Alloying additive
High Nitrogen Concentration in Fe—Cr—Ni Alloys. 73-82A

Nitrogen, Alloying elements
The Measurement of the Surface Tension of Molten Fe—3.52% C—2.02% Si(—Al,—Ti,—N) Alloys by the Maximum Bubble Pressure Method. 200-203B

Nitrogen, Environment
Penetration and Chemical Reactions in Carbon Cathodes During Aluminum Electrolysis. I. Laboratory Experiments. 75-89B

Nitrogen, Quaternary systems
Thermodynamic Analysis and Evaluation of the Fe—Cr—Mn—N System. 2393-2409A

Nitrogen, Ternary systems
A Thermodynamic Evaluation of the Fe—Mn—N System. 629-645A

Nitrogen compounds
See Nitrides

Nodular graphitic structure, Cooling effects
A Model for the Graphite Formation in Ductile Cast Iron. II. Solid State Transformation Reactions. 2347-2353A

Nodular iron, Casting
A Stereological Formulation for the Source Team in Micromodels of Equiaxed Eutectic Solidification. 539-542B

Nodular iron, Diffusion
A Model for the Graphite Formation in Ductile Cast Iron. II. Solid State Transformation Reactions. 2347-2353A

Nodular iron, Microstructure
A Model for the Graphite Formation in Ductile Cast Iron. I. Inoculation Mechanisms. 2321-2345A

Nodules (graphite)
See Nodular graphitic structure

Nondestructive testing
See Ultrasonic testing

Nonferrous alloys
See Nickel base alloys
Zinc base alloys
Zirconium base alloys

Nonferrous metals
See Cobalt
Copper
Hafnium
Indium
Manganese
Nickel
Scandium
Zinc

Nonferrous smelting
See Smelting

Normalizing (heat treatment)
Influence of Long-Term Aging and Superimposed Creep Stress on the Microstructure of 2.25Cr—1Mo Steel. 315-326A

Notch brittleness
See Brittleness

Notch ductility
See Ductility

Notch effect
See Notch sensitivity

Notch impact strength
See Impact strength

Notch impact tests
See Impact tests

Notch sensitivity
Critical Assessment of the Local Cleavage Stress σ_f^* in Notch Specimens of C—Mn Steel. 1381-1389B

Notched bar tensile test
See Tension tests

Nucleation
How Are New Orientations Generated During Primary Recrystallization?en 225-239B
A Transmission Electron Microscopy Study of Copper Precipitation in the Cementite Phase of Hypereutectoid Alloy Steels. 781-793A
Discussion of "Void Nucleation in Constrained Silver Interlayers" and "Void Growth and Coalescence in Constrained Silver Interlayers". 1877-1878A
Authors' Reply [to Discussion of "Void Nucleation in Constrained Silver Interlayers" and "Void Growth and Coalescence in Constrained Silver Interlayers"]. 1878-1879A
Effect of Stretching on the Precipitation Kinetics of an Al—2.0Li—2.8Cu—0.5Mg(—0.13Zr) Alloy. 2613-2621A

Nucleation, Alloying effects
Microstructure and Mechanical Behavior of Al—Li—Cu—Mg Alloy 8090 Microalloyed With Vanadium and Beryllium. 95-104A

Nucleation, Composition effects
Potassium Bubbles in Tungsten Wire. 1073-1084A

Nucleation, Cooling effects
Three-Dimensional Probabilistic Simulation of Solidification Grain Structures: Application to Superalloy Precision Castings. 467-479A
Study of the Mechanism of Grain Refinement of Aluminum After Additions of Titanium- and Boron-Containing Master Alloys. 481-491A
A Stereological Formulation for the Source Team in Micromodels of Equiaxed Eutectic Solidification. 539-542B
Heterogeneous Nucleation of Solidification of Silicon by Solid Aluminum in Hypoeutectic Al—Si Alloy. 1195-1204A
Kinetics of Growth of the Ti—Co Intermetallic Compounds During Rapid Solidification. 1869-1875A
A Model for the Graphite Formation in Ductile Cast Iron. I. Inoculation Mechanisms. 2321-2345A

Nucleation, Diffusion effects
Atomic Mechanisms of Diffusional Nucleation and Growth and Comparisons With Their Counterparts in Shear Transformations. 241-276A

Nucleation, Heating effects
Transformation to Ni_5Al_3 in a 63.0 At.% Ni—Al Alloy. 83-94A
The Microstructure of Discontinuously Precipitated Lamellae in an Austenitic Fe—42.4 wt.% Ni—4.15 wt.% Al—0.45 wt.% C Alloy. 1039-1047A
The Morphological Changes of γ' Precipitates in a Ni—8Al (st.%) Alloy During Their Coarsening. 1975-1981A

Nucleation, Pressure effects
Mechanisms of Heterogeneous Nucleation of Pores in Metals and Alloys. 1845-1856A

Nucleation, Temperature effects
Computer Simulation of VC Precipitation at Moving γ/α Interfaces. 2195-2207A

Mechanism of TiC Formation in Al/TiC In Situ Metal-Matrix Composites. 2803-2805A

Nuclei (transformation)
See Nucleation

Numerical analysis
The Density of Liquid Iron—Carbon Alloys. 5-10B

Oil quenching
Effect of Microstructure on the Corrosion and Deformation Behavior of a Newly Developed 6Mn—5Cr—1.5Cu Corrosion-Resistant White Iron. 445-457A
Age-Hardening Behavior of Titanium Alloy Ti—6Al—5Zr—0.5Mo—0.25Si. 763-766A

Optical properties
See Refractivity

Order disorder
See also Short range order
Spontaneous Evolution of Microstructure in Materials. 1689-1721A

Order disorder, Cooling effects
Phase Selection in Undercooled Ti_3Sn Melts. 1481-1496A
Kinetics of Growth of the Ti—Co Intermetallic Compounds During Rapid Solidification. 1869-1875A

Order disorder, Deformation effects
Creep Behavior of an Al-2.0 Wt.%.Li Alloy in the Temperature Range 300-500°C. 2001-2007A

Order disorder, Heating effects
Homogenization of Near-Gamma Titanium Aluminides: Analysis of Kinetics and Process Scaleup Feasibility. 1295-1306B

Ordered alloys
See Intermetallics

Ordering
See Order disorder

Ore beneficiation
See Beneficiation

Ore concentration
See Beneficiation

Ore dressing
See Beneficiation

Ores
See Iron ores
Laterites
Nickel ores

Orientation
See also Fiber orientation
Grain orientation
Orientation relationships
Preferred orientation
Microstructural Formation in Longitudinal Bicrystal Welds. 1433-1446B

Orientation relationships
Atomic Mechanisms of Diffusional Nucleation and Growth and Comparisons With Their Counterparts in Shear Transformations. 241-276A
Orientation Imaging: the Emergence of a New Microscopy. 819-831A
Fracture Morphology of NiAl Single Crystals Tested in Tension. 1363-1371B

Orientation relationships, Alloying effects
A New Orientation Relationship Between M_6C Carbide and the Austenite Matrix in an Fe—Mn—Al—Mo—C Alloy. 1671-1673A

Orientation relationships, Heating effects
Orientation Relationships Between M_2C Carbide and the Austenite Matrix in an Fe—Mn—Al—Mo—C Alloy. 1057-1065A

OSM process
See Oxygen steel making

Oxidation
Experimental and Theoretical Analysis of Zinc Updraft Sintering. 27-38B
Quantitative Method for Silica Flux Evaluation. 63-73B
A Mössbauer Study of the Behavior of Iron Cations in Iron Oxide-Containing Melts at 1400°C. 101-111B
Combustion Reaction of $Ni_{40}Ti_{60}$ During Mechanical Alloying in Oxygen Atmosphere. 225-227A
Periodic Oxide Cracking on Fe2.25Cr1Mo Produced by High-Temperature Fatigue Tests With a Compression Hold. 327-333A
Application of a Nonisothermal Thermogravimetric Method to the Kinetic Study of the Reduction of Metallic Oxides. II. A Theoretical Treatment of Powder Bed Reduction and Its Application to the Reduction of Tungsten Oxide by Hydrogen. 475-480B
Oxygen and Sulfur Solubilities in Ni—Fe—S—O Melts. 847-856B
The Oxidation of Ilmenite and Its Relationship to the FeO—Fe_2O_3—TiO_2 Phase Diagram at 1073 and 1140K. 1257-1264B

Oxidation, Alloying effects
Motions of Alloying Additions in the CAS Steelmaking Operations. 649-655B
The Effect of Manganese on the Activities of Iron, Nickel, and Chromium in an Fe—Ni—Cr Base Alloy. 2379-2382A

Oxidation, Cooling effects
Service Failure of Hot-Stage Turbine Blades: the Role and Mechanisms of Oxidation Ratcheting. 2313-2319A

Oxidation, Environmental effects
Environmental Fatigue of an Al—Li—Cu Alloy. II. Microscopic Hydrogen Cracking Processes. 2751-2762A

Oxidation, High temperature effects
Compositional Changes in Aluminum—Lithium-Base Alloys Caused by Oxidation. 2279-2288A

Oxidation, Stress effects
A Theoretical Evaluation of Crack Closure. 2225-2232A
Fatigue and Creep—Fatigue Damage of Austenitic Stainless Steels Under Multiaxial Loading. 2247-2261A

Oxidation resistance, Deformation effects
A Structural Study of Oxidation in a Zirconia-Toughened Alumina Fiber-Reinforced Fe_3Al Composite. 435-443A

Oxidation resistance, High temperature effects
Mechanical and Oxidation Properties of AlRu-Based High-Temperature Alloys. 759-763A

Oxides
See also Aluminum oxide
Magnesium oxide

Oxides, Composite materials
Ductile Fracture of Mechanically Alloyed Iron—Yttria Alloys. 681-687A

Oxides, Dopants
Nonuniform Recrystallization in a Mechanically Alloyed Nickel-Base Superalloy. 1049-1055A

Oxidizing
See Oxidation

Oxyconverters
See Oxygen blown converters

Oxygen, Diffusion
The Detection of Solutal Convection During Electrochemical Measurement of the Oxygen Diffusivity in Liquid Tin. 91-100B

Oxygen, Ternary systems
Thermodynamics of Si—C—O System. 1212-1214A
Phase Relations in the System Cu—Gd—O and Gibbs Energy of Formation of $CuGd_2O_4$. 1655-1660A

Oxygen blown converters
Mathematical Modeling of Postcombustion in a KOBM Converter. 179-188B
Measurement and Modeling of Turbulence in the Gas/Liquid Two-Phase Zone During Gas Injection. 695-705B

Oxygen compounds
See Oxides
Perchlorates
Zirconates

Oxygen conversion processes
See Oxygen steel making

Oxygen steel making
Mathematical Modeling of Postcombustion in a KOBM Converter. 179-188B

Packing (amorphous structure)
See Amorphous structure

Packing (crystal density)
See Crystal structure

Packing (liquid structure)
See Atomic structure

Parameters
See Lattice parameters
Welding parameters

Partial pressure
Mechanisms of Heterogeneous Nucleation of Pores in Metals and Alloys. 1845-1856A

Particle accelerators
See Synchrotrons

Particle size
Microstructure and Mechanical Properties of Dispersion-Strengthened High-Temperature Al—8.5Fe—1.2V—1.7Si Alloys Produced by Atomized Melt Dispersion Process. 865-873A
Modeling of Particle Size Evolution During Mechanical Milling. 2465-2471A

Particulate composites, Casting
Elaboration of Metal Matrix Composites From Thixotropic Alloy Slurries Using a New Magnetohydrodynamic Caster. 493-510B
Evaluation of the Wettability of Liquid Aluminum With Ceramic Particulates (SiC, TiC, Al_2O_3) by Means of Pressure Infiltration. 1423-1432B
The Reduced Pressure Test as a Measuring Tool in the Evaluation of Porosity/Hydrogen Content in Al—7 wt.% Si—10 vol.% SiC(p) Metal Matrix Composite. 1857-1868A
Synthesis of TiC Particulates and Their Segregation During Solidification in In Situ Processed Al—TiC Composites. 2358-2362A

Particulate composites, Heat treatment
Effects of Heat Treatment and Reinforcement Size on Reinforcement Fracture During Tension Testing of a SiC_p Discontinuously Reinforced Aluminum Alloy. 2531-2543A

Particulate composites, Mechanical properties
Stress Distribution in Particulate-Reinforced Metal-Matrix Composites Subjected to External Load. 197-207A
Preliminary Evaluation of Tensile and Stress—Rupture Behavior of Tungsten + 24 at.% Rhenium + 0.4 at.% HfC Wire. 209-214A
Toughening Mechanisms in Intermetallics. (Conference Paper) 561-567A
The Effect of Superimposed Hydrostatic Pressure on Deformation and Fracture. II. Particulate-Reinforced 6061 Composites. (Conference Paper) 609-615A
Ductile Fracture of Mechanically Alloyed Iron—Yttria Alloys. 681-687A
Microstructural Toughening Mechanisms in γ-TiAl 20% TiCb as Determined by FRASTA. 883-894A
Particulate Fracture During Deformation of a Spray Formed Metal-Matrix Composite. 1575-1588A

Effect of Melt Cleanliness on the Properties of an Al—10 wt.% Si—10 vol.% SiC(p) Composite. 1631-1645A
Residual Stresses and Their Effects on Deformation in Particle-Reinforced Metal-Matrix Composites. 2487-2496A
The Influence of Matrix Microstructure and TiC Reinforcement on the Cyclic Response and Fatigue Behavior of 2219 Aluminum. 2545-2557A
The Influence of Matrix Microstructure and Particle Reinforcement on the Creep Behavior of 2219 Aluminum. 2731-2741A

Particulate composites, Physical properties
Damping Behavior of 6061Al/Gr Metal Matrix Composites. 701-712A

Particulate composites, Powder technology
Strength, Fracture, and Fatigue Behavior of Advanced High-Temperature Intermetallics Reinforced With Ductile Phases. (Conference Paper) 585-600A
Hot Isostatic Pressing (HIP) of Powder Mixtures and Composites: Packing, Densification, and Microstructural Effects. 1345-1354B
Synthesis of Bulk and Reinforced Nickel Aluminides by Reactive Infiltration. 2161-2170A

Particulate composites, Surface properties
Tribological Characteristics of Aluminum—50 Vol.% Graphite Composite. 151-159A

Particulate composites, Synthesis
Mechanism of TiC Formation in Al/TiC In Situ Metal-Matrix Composites. 2803-2805A

Perchlorates, Environment
Stress Corrosion Cracking of Ag—20Au in $HClO_4$, $AgClO_4$, and KCl Solutions by Surface Mobility. 425-433A

Peritectic reactions, Cooling effects
Study of the Mechanism of Grain Refinement of Aluminum After Additions of Titanium- and Boron-Containing Master Alloys. 481-491A

Permanent mold casting
See also Die casting
Numerical Simulation of Solidification of Molten Aluminum Alloys in Cylindrical Molds. 677-684B

Permeability
General Model of a Gas Transport Through Solid Porous Membranes. 1527-1530A

Phase boundary
Spontaneous Evolution of Microstructure in Materials. 1689-1721A

Phase boundary, Field effects
Shape and Stability Computations of Electromagnetically Confined Liquid Metal Boundaries. 171-178B

Phase boundary, Heating effects
Microstructural Characterisation of Near-α Titanium Alloy Ti—6Al—4Sn—4Zr—0.70Nb—0.50Mo—0.40Si. 1273-1280B

Phase decomposition
See also Eutectoid decomposition

Phase decomposition, Cooling effects
Structure and Decomposition of A13-Type Phase in Rapidly Solidified High-Carbon Cr—Si Iron Alloy. 751-756A
Transformation Path Dependence of the Bain Strain Relaxation During Decomposition of a Hypereutectoid CuBe Alloy. 2605-2611A

Phase decomposition, Heating effects
The Microstructure of Discontinuously Precipitated Lamellae in an Austenitic Fe—42.4 wt.% Ni—4.15 wt.% Al—0.45 wt.% C Alloy. 1039-1047A

Phase decomposition, Radiation effects
Early Stages of Decomposition in Iron—Carbon and Iron—Nitrogen Martensites: Diffraction Analysis Using Synchrotron Radiation. 1965-1973A

Phase diagram reactions
See also Eutectic reactions
Eutectoid reactions
Martensitic transformations
Peritectic reactions
Phase decomposition
Metastable Crystalline and Amorphous Structures Formed in the Cu—W System by Vapor Deposition. 1027-1037A
Thermodynamics of Si—C—O System. 1212-1214A
Calorimetrically Measured Enthalpies for the Reaction of H_2 (g) With Zirconium and Zirconium Alloys. 1471-1479A

Phase diagram reactions, Alloying effects
The Activity of $CuO_{0.5}$ Along the Air Isobars in the Systems Cu—O—SiO_2 and Cu—O—CaO at 1300°C. 59-62B

Phase diagram reactions, Heating effects
The Isothermal Diagram of Transformation of the Residual Austenite by Tempering. 2805-2810A

Phase diagram reactions, pH effects
Thermodynamics of the Zinc—Sulfur Dioxide—Water System. 409-417B

Phase diagram reactions, Temperature effects
Sn—C and Al—Sn—C Phase Diagrams and Thermodynamic Properties of Carbon in the Alloys: 1550-2300°C. 53-58B
Liquidus Temperatures in the Ti—Al System. 61-66A
A Thermodynamic Evaluation of the Fe—Mn—N System. 629-645A
Critical Evaluation and Optimization of the Thermodynamic Properties and Phase Diagrams of the MnO—TiO_2, MgO—TiO_2, FeO—TiO_2, Ti_2O_3—TiO_2, Na_2O—TiO_2, and K_2O—TiO_2 Systems. 795-805B
Critical Evaluation and Optimization of the Thermodynamic Properties and Phase Diagrams of the CaO—Al_2O_3, Al_2O_3—SiO_2, CaO—Al_2O_3—SiO_2 Systems. 807-816B
Calorimetrically Measured Enthalpies for the Reaction of $H_2(D_2)$ (g) With Titanium and Ti—Ni Alloys at 323K. 867-873B
A Thermodynamic Evaluation of the Fe—Cr—Mn—C System. 1017-1025A
Phase Diagram of the Bi_2O_3—SrO—CaO Quasiternary System. 1447-1449B
Phase Relations in the System Cu—Gd—O and Gibbs Energy of Formation of $CuGd_2O_4$. 1655-1660A
An Experimental Study and Thermodynamic Evaluation of the Fe—Mo—Ti System at 1000°C. 2137-2144A

Phase stability, Alloying effects
The Effect of Manganese on the Activities of Iron, Nickel, and Chromium in an Fe—Ni—Cr Base Alloy. 2379-2382A

Phase stability, Composition effects
Design and Development of Hot Corrosion-Resistant Nickel-Base Single Crystal Superalloys by the d-Electrons Alloy Design Theory. I. Characterization of the Phase Stability. 2443-2450A

Phase stability, Deformation effects
Creep Behavior of an Al-2.0 Wt.%.Li Alloy in the Temperature Range 300-500°C. 2001-2007A

Phase stability, Diffusion effects
A New Model for Diffusional Growth With Nonequilibrium Interface Conditions. 1507-1516A

Phase stability, Environmental effects
Calorimetrically Measured Enthalpies for the Reaction of Hafnium With $H(D)_2$ (g). 2623-2627A

Phase stability, Heating effects
Effect of Microstructure on the Corrosion and Deformation Behavior of a Newly Developed 6Mn—5Cr—1.5Cu Corrosion-Resistant White Iron. 445-457A
Microstructural Characterisation of Near-α Titanium Alloy Ti—6Al—4Sn—4Zr—0.70Nb—0.50Mo—0.40Si. 1273-1280B
The Mechanical Stability of Austenite and Cryogenic Toughness of Ferritic Fe—Mn—Al Alloys. 1333-1343B
Composition and Stability of Ω Phase in an Al—Cu—Mg—Ag Alloy. 1461-1470A
The Dendritic Growth of γ' Precipitates and Grain Boundary Serration in a Model Nickel-Base Superalloy. 1733-1743A
Transmission Electron Microscopy Examination of Hardening and Toughening Phenomena in Aermet 100. 1943-1955A

Phase stability, Temperature effects
Hydrogen Probe Equipped With $SrCeO_3$-Based Proton Conductor and Ca/CaH_2 Reference Electrode. 789-794B
Phase Relations in the System Cu—Gd—O and Gibbs Energy of Formation of $CuGd_2O_4$. 1655-1660A

Phase structure
See Solid phases

Phase transformations
See also Martensitic transformations
Determination of Interfacial Heat Transfer Coefficients in Casting and Quenching Using a Solution Technique for Inverse Problems Based on the Boundary Element Method. 1077-1086B
Spontaneous Evolution of Microstructure in Materials. 1689-1721A

Phase transformations, Alloying effects
Unusual Morphology of the Omega Phase in a Zirconium—1.75 at.% Nickel Alloy. 495-501A
Phase Chemistry and Precipitation Reactions in Maraging Steels. II. Cobalt-Free T-300 Steel. 1233-1239B
Effects of Silicon Addition on the First Stage of Precipitation in the Al—1.52% Cu—0.75% Mg Alloy. 2181-2187A

Phase transformations, Cooling effects
A Model for the Graphite Formation in Ductile Cast Iron. II. Solid State Transformation Reactions. 2347-2353A
Transformation Path Dependence of the Bain Strain Relaxation During Decomposition of a Hypereutectoid CuBe Alloy. 2605-2611A
Continuous Cooling Deformation Testing of Steels. 2657-2665A

Phase transformations, Diffusion effects
A New Model for Diffusional Growth With Nonequilibrium Interface Conditions. 1507-1516A

Phase transformations, Environmental effects
Calorimetrically Measured Enthalpies for the Reaction of Hafnium With $H(D)_2$ (g). 2623-2627A

Phase transformations, Heating effects
Effect of Microstructure on the Corrosion and Deformation Behavior of a Newly Developed 6Mn—5Cr—1.5Cu Corrosion-Resistant White Iron. 445-457A
Phase Chemistry and Precipitation Reactions in Maraging Steels. I. Introduction and Study of Cobalt-Containing C-300 Steel. 1221-1239B
Phase Chemistry and Precipitation Reactions in Maraging Steels. III. Model Alloys. 1241-1249B
Morphological Effect on the Mechanical Behavior of a Two-Phase Ti_3Al—Nb Alloy. 1785-1793A
Phase Transformations in an Fe—7.8Al—29.5Mn—1.5Si—1.05C Alloy. 1957-1963A
The Isothermal Diagram of Transformation of the Residual Austenite by Tempering. 2805-2810A

Phase transformations, High temperature effects
Formation of $L1_2$-Structured Ni_3Si. 283-292A

Phase transformations, Stress effects
The Influence of Martensite Shape, Concentration, and Phase Transformation Strain on the Deformation Behavior of Stable Dual-Phase Steels. 301-314A

Phase transformations, Temperature effects
Microstructural Changes on the Reduction of Imperial Smelting Furnace Sinters. 39-51B

Incomplete Reaction Phenomenon in High Strength Bainitic Steels. 2145-2150A
Computer Simulation of VC Precipitation at Moving γ/α Interfaces. 2195-2207A

Phases (state of matter)
See also Gas phases
Intermetallic phases
Liquid phases
Metastable phases
Solid phases
Vapor phases
The Oxidation of Ilmenite and Its Relationship to the FeO—Fe_2O_3—TiO_2 Phase Diagram at 1073 and 1140K. 1257-1264B
Effect of Stretching on the Precipitation Kinetics of an Al—2.0Li—2.8Cu—0.5Mg(—0.13Zr) Alloy. 2613-2621A

Phases (state of matter), Alloying effects
The Effect of Nickel, Chromium, and Primary Alpha Phase on the Creep Behavior of Ti—6242Si. 1819-1826A

Phases (state of matter), Cooling effects
Electrical Conductivity and Microstructure of Aluminum Alloys. 2355-2358A

Phases (state of matter), Heating effects
The Composition of the Solid Solution, Structure, and Contact Fatigue of the Case-Hardened Layer. 1163-1168A
Microstructure and Hydrogen Effects on Fracture in the Alloy A-286. 1983-1991A
Precipitation Hardening in Nickel—Copper Base Alloy Monel K500. 2709-2719A

Phases (state of matter), High temperature effects
Magnesium Silicide Intermetallic Alloys. 2383-2391A

Phases (state of matter), Stress effects
Residual Stress Measurements by X-Ray Diffraction in the Ferritic/Austenitic Interface Weldment. 2095-2106A

Phases (state of matter), Temperature effects
Microstructural Changes on the Reduction of Imperial Smelting Furnace Sinters. 39-51B
A Thermodynamic Evaluation of the Cr—Mn and Fe—Cr—Mn Systems. 1919-1933A

Photo oxidation
See Oxidation

Photodecomposition
See Decomposition reactions

Photography
See Cinematography

Photoionization
See Ionization

Physical properties
See Anisotropy
Density
Diffusivity
Flammability
Permeability
Porosity
Solubility
Surface tension
Transport properties
Wettability

Pinning
See Dislocation pinning

Pinning (dislocation)
See Dislocation pinning

Pipe, Thermal properties
Entrance Effects on Low Prandtl Number Convection Through a Circular Duct. 197-200B

Pitting (corrosion), Microstructural effects
Effect of Microstructure on the Corrosion and Deformation Behavior of a Newly Developed 6Mn—5Cr—1.5Cu Corrosion-Resistant White Iron. 445-457A

Pitting potential
See Corrosion potential
Pitting (corrosion)

Plasma arc casting
See Casting

Plaster of Paris
See Calcium compounds

Plastic deformation
A Study of Subsurface Crack Initiation Produced by Rolling Contact Fatigue. 351-359A
An Analytical Description for the Deformation Response of Ni_3Al Alloys in the Anomalous Regime. 397-401A
Environmentally Assisted Cracking of Two-Phase Iron—Manganese—Aluminum Alloys in NaCl Solution. 459-464A
The Absence of Relative Grain Translation During Superplastic Deformation of an Al—Li—Mg—Cu—Zr Alloy. 1085-1093A
Densification and Deformation Behavior of a Porous Metal Strip During Hot Rolling. 1753-1760A
General Aspects of the Thermomechanical Treatment of Two-Phase Intermetallic TiAl Compounds. 1795-1806A
Creep Behavior of an Al-2.0 Wt.%.Li Alloy in the Temperature Range 300-500°C. 2001-2007A

Plastic deformation, Alloying effects
The Effect of Nickel, Chromium, and Primary Alpha Phase on the Creep Behavior of Ti—6242Si. 1819-1826A

Plastic deformation, Microstructural effects
The Combined Effect of Grain Size and Strain Rate on the Dislocation Substructures and Mechanical Properties in Pure Aluminum. 1153-1161A
Microstructural Features of Flow Instability in α-Titanium Cylinders Under High Strain Rate Compression at 25-400°C. 2513-2520A

Plastic deformation, Stress effects
Stress Distribution in Particulate-Reinforced Metal-Matrix Composites Subjected to External Load. 197-207A
Residual Stresses and Their Effects on Deformation in Particle-Reinforced Metal-Matrix Composites. 2487-2496A
The Effects of Combined Strain-Path and Strain-Rate Changes in Aluminum. 2679-2689A

Plastic deformation, Welding effects
Microstructural Modifications in an Explosively Welded Ti/Ti Clad Material. II. Deformation Structures Around Bonding Interface. 743-750A

Plastic flow
Tribological Characteristics of Aluminum—50 Vol.% Graphite Composite. 151-159A

Plastic strain
See Plastic deformation

Plasticity
See also Superplasticity

Plasticity, Alloying effects
Boron and Off-Stoichiometry Effects on the Strength and Ductility of AlRu. 227-230A
Environmentally Assisted Cracking of Two-Phase Iron—Manganese—Aluminum Alloys in NaCl Solution. 459-464A

Plasticity, Cooling effects
Misfit Accommodation in a Quenched and Aged Al—Cu Alloy With Silicon Particles. 1723-1731A

Plasticity, Environmental effects
Effects of Hydrogen on the Mixed Mode I/III Toughness of a High-Purity Rotor Steel. 1450-1451B
Environmental Fatigue of an Al—Li—Cu Alloy. II. Microscopic Hydrogen Cracking Processes. 2751-2762A

Plasticity, Heating effects
Elastic Limit and Microplastic Response of Hardened Steels. 2263-2277A

Plasticity, Microstructural effects
Micromechanisms of Brittle Fracture. (Conference Paper) 523-534A
Authors' Reply [to Discussion of "Void Nucleation in Constrained Silver Interlayers" and "Void Growth and Coalescence in Constrained Silver Interlayers"]. 1878-1879A

Plasticity, Stress effects
The Influence of Martensite Shape, Concentration, and Phase Transformation Strain on the Deformation Behavior of Stable Dual-Phase Steels. 301-314A
The Growth of Small Fatigue Cracks in A286 Steel. 689-700A
Residual Strain Gradient Determination in Metal Matrix Composites by Synchrotron X-Ray Energy Dispersive Diffraction. 1117-1124A
Evolution of Damage and Plasticity in Titanium-Based, Fiber-Reinforced Composites. 1597-1610A
Layer Thickness Effect on Ductile Tensile Fracture of Ultrahigh Carbon Steel—Brass Laminates. 1647-1653A
Influence of Thermally Induced Plasticity on the Bauschinger Effect of SiC/Al Composites. 1879-1882A
On the Development of Constitutive Relations for Metallic Powders. 2071-2081A
Microstructural Examination of Fatigue Crack Tip in High Strength Steel. 2209-2216A
A Theoretical Evaluation of Crack Closure. 2225-2232A
Fatigue and Creep—Fatigue Damage of Austenitic Stainless Steels Under Multiaxial Loading. 2247-2261A

Plastics
See Polymers

Plate metal, Mechanical properties
Microstructural Examination of Fatigue Crack Tip in High Strength Steel. 2209-2216A

Plate metal, Welding
Keyhole Formation. 875-880B
New Explosive Welding Technique to Weld Aluminum Alloy and Stainless Steel Plates Using a Stainless Steel Intermediate Plate. 2289-2297A

Plates (structural members), Thermal properties
Thermal Conductivity and Thermal Expansion of Graphite Fiber-Reinforced Copper Matrix Composites. (Conference Paper) 43-52A

Plating
See Copper plating
Electroplating

Platinum base alloys, Phases (state of matter)
The Activity of $CuO_{0.5}$ Along the Air Isobars in the Systems Cu—O—SiO_2 and Cu—O—CaO at 1300°C. 59-62B

Platinum metal alloys
See Platinum base alloys
Ruthenium base alloys

Platinum metal compounds
See Ruthenium compounds

Point defects
See Lattice vacancies

Poling
See Deoxidizing

Pollution
See Air pollution

Pollution abatement
Decreased Gas Consumption of a Fluidized Bed Furnace. 889-897B

Polycrystals
See also Bicrystals

Polycrystals, Mechanical properties
A Dislocation Shielding Model for the Fracture of Semibrittle Polycrystals. 343-350A

Polymers, Coatings
Direct Viscoelastic Strain Relaxation Measurements With Interference Microscopy: Analysis of Sheet Metal Polymer Coatings. 1678-1681A

Pores
See Porosity

Porosity
Synthesis of Surface Pores in a Bronze—Graphite Composite Using Electron Beam Surface Melting. 230-233A
An Investigation of the Effect of Porosity and Diluents on Micropyretic Synthesis. 617-628A
Reaction Sintering of Cold-Extruded Elemental Powder Mixture Ti—48Al. 1517-1526A
General Model of a Gas Transport Through Solid Porous Membranes. 1527-1530A
Synthesis of Bulk and Reinforced Nickel Aluminides by Reactive Infiltration. 2161-2170A

Porosity, Alloying effects
The Effect of Sodium and Strontium Modification on Surface Tension and Volumetric Shrinkage of A356 Alloy and Their Influence on Porosity Formation. 1055-1063B

Porosity, Cooling effects
Mechanisms of Porosity Formation During Solidification: a Theoretical Analysis. 349-364B
Evolution of Porosity in Long Freezing Range Alloys. 365-377B
Service Failure of Hot-Stage Turbine Blades: the Role and Mechanisms of Oxidation Ratcheting. 2313-2319A

Porosity, Deformation effects
Densification and Deformation Behavior of a Porous Metal Strip During Hot Rolling. 1753-1760A

Porosity, Environmental effects
The Reduced Pressure Test as a Measuring Tool in the Evaluation of Porosity/Hydrogen Content in Al—7 wt.% Si—10 vol.% SiC(p) Metal Matrix Composite. 1857-1868A

Porosity, Pressure effects
Mechanisms of Heterogeneous Nucleation of Pores in Metals and Alloys. 1845-1856A

Porosity, Welding effects
Correction to "Beam Focusing Characteristics and Alloying Element Effects on High-Intensity Electron Beam Welding". 81-90B
The Effects of Process Variables on Pulsed Nd:YAG Laser Spot Welds. I. AISI 409 Stainless Steel. 1065-1076B

Postforming
See Forming

Potassium, Dopants
The Effect of Wire History on the Coarsened Substructure and Secondary Recrystallization of Doped Tungsten. 843-851A
Potassium Bubbles in Tungsten Wire. 1073-1084A

Potential (electric)
See Electric potential

Pots (electrolytic)
See Electrolytic cells

Pouring
See Tapping (pouring)

Powder blending
The Role of Inclusion and Pore Content on the Fracture Toughness of Powder-Processed Blended Elemental Titanium Alloys. 161-174A
Milling Dynamics. I. Attritor Dynamics: Results of a Cinematographic Study. 175-185A
Combustion Reaction of $Ni_{40}Ti_{60}$ During Mechanical Alloying in Oxygen Atmosphere. 225-227A
The Kinetics of Composite Particle Formation During Mechanical Alloying. 647-657A
Synthesis of Bulk and Reinforced Nickel Aluminides by Reactive Infiltration. 2161-2170A

Powder metallurgy
See also Sintering (powder metallurgy)
Deformation-Processed Wire Prepared From Gas-Atomized Cu—Nb Alloy Powders. (Conference Paper) 21-26A
Strength and Electrical Conductivity of Deformation-Processed Cu—15 Vol% Fe Alloys Produced by Powder Metallurgy Techniques. (Conference Paper) 35-42A
Milling Dynamics. I. Attritor Dynamics: Results of a Cinematographic Study. 175-185A
Reduction Kinetics of $Ni(OH)_2$ to Nickel Powder Preparation Under Hydrothermal Conditions. 557-561B
The Roles of Rare Earth Dispersoids and Process Route on the Low Cycle Fatigue Behavior of a Rapidly Solidified Powder Metallurgy Titanium Alloy. 1761-1771A

Powder technology
See also Atomizing
Powder metallurgy
Model-Based Feedback Control of Deformation Processing With Microstructure Goals. 289-300B

Power supplies
See Electric batteries

Prandtl number
Entrance Effects on Low Prandtl Number Convection Through a Circular Duct. 197-200B

Praseodymium, Thermal properties
Entrance Effects on Low Prandtl Number Convection Through a Circular Duct. 197-200B

Precious metal alloys
See Silver base alloys

Precious metals
See Gold
Silver

Precipitates, Composition effects
Design and Development of Hot Corrosion-Resistant Nickel-Base Single Crystal Superalloys by the d-Electrons Alloy Design Theory. I. Characterization of the Phase Stability. 2443-2450A

Precipitation
Characterization of Neodymium Oxalate Precipitated From 2-Ethylhexyl Phosphonic Acid Mono-2-Ethylhexyl Ester Solution. 537-538B
Leaching of Cu_2O With Aqueous Solution of Sulfur Dioxide. 563-570B
A New Orientation Relationship Between M_6C Carbide and the Austenite Matrix in an Fe—Mn—Al—Mo—C Alloy. 1671-1673A
Intrinsic Fatigue Crack Growth Rates for Al—Li—Cu—Mg Alloys in Vacuum. 1807-1817A
Auger Electron Spectroscopy Study of Grain Boundary Segregation in Alloy K-500. I. Behavior in As-Processed State. 1897-1907A
Microstructural Control in an Aluminum Core Alloy for Brazing Sheet Applications. 1935-1942A

Precipitation, Alloying effects
Microstructure and Mechanical Behavior of Al—Li—Cu—Mg Alloy 8090 Microalloyed With Vanadium and Beryllium. 95-104A

Precipitation, Cooling effects
Misfit Accommodation in a Quenched and Aged Al—Cu Alloy With Silicon Particles. 1723-1731A
A Model for the Graphite Formation in Ductile Cast Iron. I. Inoculation Mechanisms. 2321-2345A
Improved Model to Predict Properties of Aluminum Alloy Products After Continuous Cooling. 2417-2427A
Transformation Path Dependence of the Bain Strain Relaxation During Decomposition of a Hypereutectoid CuBe Alloy. 2605-2611A

Precipitation, Deformation effects
Simulated Hot Working, Cold Working, and Annealing of Aluminum-Containing Steels. 1589-1596A
Effect of Deformation Parameters on the No-Recrystallization Temperature in Niobium-Bearing Steels. 2151-2159A

Precipitation, Heating effects
The Effect of the Precipitation of Coherent and Incoherent Precipitates on the Ductility and Toughness of High-Strength Steel. 127-139A
Orientation Relationships Between M_2C Carbide and the Austenite Matrix in an Fe—Mn—Al—Mo—C Alloy. 1057-1065A
The Dendritic Growth of γ' Precipitates and Grain Boundary Serration in a Model Nickel-Base Superalloy. 1733-1743A
Auger Electron Spectroscopy Study of Grain Boundary Segregation in Alloy K-500. II. Behavior in Slow Strain Rate Tensile Test. 1909-1917A
Transmission Electron Microscopy Examination of Hardening and Toughening Phenomena in Aermet 100. 1943-1955A
Phase Transformations in an Fe—7.8Al—29.5Mn—1.5Si—1.05C Alloy. 1957-1963A
The Morphological Changes of γ' Precipitates in a Ni—8Al (st.%) Alloy During Their Coarsening. 1975-1981A
Precipitation Hardening in 350 Grade Maraging Steel. 2429-2442A
Crystallographic Orientation Relationships Among η-Ni_3Ti Precipitate, Reverted Austenite, and Martensitic Matrix in Fe—10Cr—10Ni—2W Maraging Alloy. 2643-2652A
Dilatometric Technique for Evaluation of the Kinetics of Solid-State Transformation of Maraging Steel. 2653-2656A

Precipitation, Temperature effects
Computer Simulation of VC Precipitation at Moving γ/α Interfaces. 2195-2207A
Thermodynamic Analysis and Evaluation of the Fe—Cr—Mn—N System. 2393-2409A

Precipitation hardening
A Transmission Electron Microscopy Study of Copper Precipitation in the Cementite Phase of Hypereutectoid Alloy Steels. 781-793A
Effect of Stretching on the Precipitation Kinetics of an Al—2.0Li—2.8Cu—0.5Mg(—0.13Zr) Alloy. 2613-2621A
Precipitation Hardening in Nickel—Copper Base Alloy Monel K500. 2709-2719A

Precipitation hardening, Alloying effects
Phase Chemistry and Precipitation Reactions in Maraging Steels. II. Cobalt-Free T-300 Steel. 1233-1239B
Phase Chemistry and Precipitation Reactions in Maraging Steels. IV. Discussion and Conclusions. 1251-1256B
The Effect of Trace-Titanium Content on the Solubility of Niobium and the Consequent Properties of Niobium-Bearing Steels. 2127-2130A
Effects of Silicon Addition on the First Stage of Precipitation in the Al—1.52% Cu—0.75% Mg Alloy. 2181-2187A

Precipitation hardening, Heating effects
Phase Chemistry and Precipitation Reactions in Maraging Steels. I. Introduction and Study of Cobalt-Containing C-300 Steel. 1221-1239B
Phase Chemistry and Precipitation Reactions in Maraging Steels. III. Model Alloys. 1241-1249B
Precipitation Hardening in 350 Grade Maraging Steel. 2429-2442A

Precipitation hardening alloys, Heating effects
Mechanical Behavior of Double-Aged AA8090. 833-841A

Precipitation hardening steels
See Maraging steels

Precision casting
See Investment casting

Preferential attack (corrosion)
See Intergranular corrosion

Preferred orientation
Damping Behavior of 6061Al/Gr Metal Matrix Composites. 701-712A
The Absence of Relative Grain Translation During Superplastic Deformation of an Al—Li—Mg—Cu—Zr Alloy. 1085-1093A

Press forging
Computer Simulation of the Forging of Fine Grain IN-718 Alloy. 2061-2071A

Pressing
See Hydrostatic pressing

Pressure
See Partial pressure
Vacuum

Pressure casting
A Structural Study of Oxidation in a Zirconia-Toughened Alumina Fiber-Reinforced Fe_3Al Composite. 435-443A
Numerical Simulation of Solidification of Molten Aluminum Alloys in Cylindrical Molds. 677-684B
Mechanisms of Heterogeneous Nucleation of Pores in Metals and Alloys. 1845-1856A

Pressure casting, Quality control
The Reduced Pressure Test as a Measuring Tool in the Evaluation of Porosity/Hydrogen Content in Al—7 wt.% Si—10 vol.% SiC(p) Metal Matrix Composite. 1857-1868A

Pressure die casting
See Die casting

Pressure molding
See Injection molding

Pressure vessels, Design
Microstructural Examination of Fatigue Crack Tip in High Strength Steel. 2209-2216A

Pressure welding
See Diffusion welding
Explosive welding

Prestraining
Effect of Changing Strain Paths on Forming Limit Diagrams of Aluminum 2008-T4. 2503-2512A

Process control
Experimental and Theoretical Analysis of Zinc Updraft Sintering. 27-38B
Calculation of Weld Metal Composition Change in High-Power Conduction Mode Carbon Dioxide Laser-Welded Stainless Steels. 145-155B
Mathematical Modeling of Postcombustion in a KOBM Converter. 179-188B
Modeling of Steel Grade Transition in Continuous Slab Casting Processes. 379-393B
Real-Time Simulation of Heat Transfer in Continuous Casting. 685-693B
Automatic Control of the Carbon Potential of Furnace Atmospheres Without Adding Enriched Gas. 881-888B
Determination of Interfacial Heat Transfer Coefficients in Casting and Quenching Using a Solution Technique for Inverse Problems Based on the Boundary Element Method. 1077-1086B
Shear Rate Thickening Flow Behavior of Semisolid Slurries. 1107-1116A
Computer Simulation of the Forging of Fine Grain IN-718 Alloy. 2061-2071A

Process metallurgy
See Refining

Productivity
Empowerment With Knowledge—Toward the Intelligent Mold for the Continuous Casting of Steel Billets. 917-935B

Propagation
See Crack propagation

Properzi process
See Continuous casting

Prosthetics
See also Surgical implants

Prosthetics, Materials selection
Excimer Laser Surface Processing of Ti—6Al—4V. 215-224A

Protective atmospheres
See Controlled atmospheres

Pseudoelasticity, Stress effects
Internal Friction Due to Thermoelastic Martensitic Transformation. 1067-1071A

Puddling
See Ironmaking

Pulse echo technique
See Ultrasonic testing

Punching
A Better Sheet Formability Test. 1143-1151A

Pyrite
Electrochemistry of *Thiobacillus ferrooxidans* Interactions With Pyrite. 717-727B

Pyroceram
See Ceramics

Pyrometallurgy
Experimental and Theoretical Analysis of Zinc Updraft Sintering. 27-38B
Quantitative Method for Silica Flux Evaluation. 63-73B
Accretion Growth on Single-Pipe Tuyeres. I. Model Development and Preliminary Analysis. 571-582B
Accretion Growth on Single-Pipe Tuyeres. II. Model Results and Discussion. 583-591B
Zinc Smelting With Coal as the Principal Heat Source and Reducing Agent. 593-598B
A Finite Element Modeling Analysis of Flow and Mass Transfer Through Nonspherical Bubbles in a Copper Converter. 617-627B
Surface and Interfacial Tension of the Ni—Fe—S, Ni—Cu—S, and Fayalite Slag Systems. 657-668B
An Improved Computer Program for Equilibrium Calculations. 1882-1889A

Qualitative analysis
The Reduced Pressure Test as a Measuring Tool in the Evaluation of Porosity/Hydrogen Content in Al—7 wt.% Si—10 vol.% SiC(p) Metal Matrix Composite. 1857-1868A

Quantitative analysis
Penetration and Chemical Reactions in Carbon Cathodes During Aluminum Electrolysis. I. Laboratory Experiments. 75-89B
A Mössbauer Study of the Behavior of Iron Cations in Iron Oxide-Containing Melts at 1400°C. 101-111B

Quaternary systems, Phases (state of matter)
A Thermodynamic Evaluation of the Fe—Cr—Mn—C System. 1017-1025A
Thermodynamic Analysis and Evaluation of the Fe—Cr—Mn—N System. 2393-2409A

Quench aging
Misfit Accommodation in a Quenched and Aged Al—Cu Alloy With Silicon Particles. 1723-1731A

Quenching (cooling)
See also Cryogenic quenching
Oil quenching
Quenching and tempering
Water quenching
Interfacial Phenomena in the Reactions of Al—B, Al—Ti—B, and Al—Zr—B Alloys With KF—AlF_3 and NaF—AlF_3 Melts. 947-953B
Interfacial Phenomena in the Reactions of Aluminum and Al—Ti Melts With KF—AlF_3 and NaF—AlF_3 Melts. 955-961B
Orientation Relationships Between M_2C Carbide and the Austenite Matrix in an Fe—Mn—Al—Mo—C Alloy. 1057-1065A
Determination of Interfacial Heat Transfer Coefficients in Casting and Quenching Using a Solution Technique for Inverse Problems Based on the Boundary Element Method. 1077-1086B
The Composition of the Solid Solution, Structure, and Contact Fatigue of the Case-Hardened Layer. 1163-1168A
Microstructural Characterisation of Near-α Titanium Alloy Ti—6Al—4Sn—4Zr—0.70Nb—0.50Mo—0.40Si. 1273-1280B
Composition and Stability of Ω Phase in an Al—Cu—Mg—Ag Alloy. 1461-1470A
Improved Model to Predict Properties of Aluminum Alloy Products After Continuous Cooling. 2417-2427A
Transformation Path Dependence of the Bain Strain Relaxation During Decomposition of a Hypereutectoid CuBe Alloy. 2605-2611A
Melting of Secondary-Phase Particles in Al—Mg—Si Alloys. 2629-2641A
Dilatometric Technique for Evaluation of the Kinetics of Solid-State Transformation of Maraging Steel. 2653-2656A

Quenching and tempering
The Microstructural Evolution, Crystallography, and Thermal Processing of Ultrahigh Carbon Fe—1.85% C Melt-Spun Ribbon. 809-818A
Transmission Electron Microscopy Examination of Hardening and Toughening Phenomena in Aermet 100. 1943-1955A
Elastic Limit and Microplastic Response of Hardened Steels. 2263-2277A
The Isothermal Diagram of Transformation of the Residual Austenite by Tempering. 2805-2810A

Quenching stresses
See Residual stress

Radiocrystallography
See Crystallography

Rapid solidification
Structure and Decomposition of A13-Type Phase in Rapidly Solidified High-Carbon Cr—Si Iron Alloy. 751-756A
Heterogeneous Nucleation of Solidification of Silicon by Solid Aluminum in Hypoeutectic Al—Si Alloy. 1195-1204A
Microstructural Characterization and *In Situ* Transmission Electron Microscopy Analysis of Laser-Processed and Thermally Treated Fe—Cr—W—C Clad Coatings. 1621-1629A
Misfit Accommodation in a Quenched and Aged Al—Cu Alloy With Silicon Particles. 1723-1731A
The Roles of Rare Earth Dispersoids and Process Route on the Low Cycle Fatigue Behavior of a Rapidly Solidified Powder Metallurgy Titanium Alloy. 1761-1771A
Kinetics of Growth of the Ti—Co Intermetallic Compounds During Rapid Solidification. 1869-1875A
Temperature Dependence of Strain Hardening in a Dispersion-Strengthened Al—Fe—V—Si Alloy. 2589-2593A

Rare earth metals
See Cerium
Gadolinium
Neodymium
Praseodymium

Rare gases
See Argon

Rates
See Cooling rate
Corrosion rate
Diffusion rate
Heating rate
Strain rate
Wear rate

Rayleigh waves
See Surface waves

Reaction entropy
See Entropy

Reaction kinetics
Reduction Rate of SiO_2 in Slag by Carbon-Saturated Iron. 113-120B
A General Model for Leaching of One or More Solid Reactants From Porous Ore Particles. 157-169B
Kinetics of the Dissolution of Pure Silver and Silver—Gold Alloys in Nitric Acid Solution. 827-837B

Reaction sintering
See Activated sintering

Reactions (chemical)
See Blast furnace chemistry
Combustion
Decomposition reactions
Denitration
Deoxidizing
Dephosphorizing
Desulfurizing
Dissolution
Electrolysis
Endothermic reactions
Hydrogenation
Interface reactions
Ionization
Oxidation

Reactivity (chemical)
See Activity (chemical)

Reclamation
See Recycling

Recrystallization
See also Grain refinement
Secondary recrystallization
How Are New Orientations Generated During Primary Recrystallization?en 225-239B
How Are New Orientations Generated During Primary Recrystallization?en 1001-1015A

Recrystallization, Composition effects
Nonuniform Recrystallization in a Mechanically Alloyed Nickel-Base Superalloy. 1049-1055A

Recrystallization, Deformation effects
Influence of Strain Rate on Interpass Softening During the Simulated Warm Rolling of Interstitial-Free Steels. 1543-1553A
Simulated Hot Working, Cold Working, and Annealing of Aluminum-Containing Steels. 1589-1596A
Physical Asymmetry of the Crystallographic Texture of an Interstitial-Free Sheet Steel. 2009-2019A
Effect of Deformation Parameters on the No-Recrystallization Temperature in Niobium-Bearing Steels. 2151-2159A

Recrystallization, Heating effects
Crystallographic Texture in Mechanically Alloyed Oxide Dispersion-Strengthened MA956 and MA957 Steels. 773-779A

Recrystallization, Size effects
Determination of the Total Texture Function From Individual Orientation Measurements by Electron Backscattering Pattern. 2299-2311A

Recycling
Thermodynamic Activity of Antimony at Dilute Solutions in Carbon-Saturated Liquid Iron. 963-973B

Red hardness
See Hardness

Red shortness
See Brittleness

Reduction
See Reduction (chemical)

Reduction (chemical)
See also Deoxidizing
Direct reduction
Application of a Nonisothermal Thermogravimetric Method to the Kinetic Study of the Reduction of Metallic Oxides. II. A Theoretical Treatment of Powder Bed Reduction and Its Application to the Reduction of Tungsten Oxide by Hydrogen. 475-480B
Reduction Kinetics of $Ni(OH)_2$ to Nickel Powder Preparation Under Hydrothermal Conditions. 557-561B
The Reduction Mechanism of Chromite in the Presence of a Silica Flux. 987-995B
The Oxidation of Ilmenite and Its Relationship to the FeO—Fe_2O_3—TiO_2 Phase Diagram at 1073 and 1140K. 1257-1264B

Reduction (chemical), Temperature effects
Reduction Rate of SiO_2 in Slag by Carbon-Saturated Iron. 113-120B

Reduction (electrolytic)
See Electrowinning

Reduction (metal working)
See Rolling

Reference materials
See Standards

Refining
See also Electrorefining
Extraction of Zinc Chloride With Dibutyl Butylphosphonate. 11-15B

Refractivity, Cooling effects
Optical Properties and Spectral Emissivities at 623.8 nm in the Titanium—Aluminum System. 67-72A

Refractory alloys
See Niobium base alloys
Tungsten base alloys

Refractory metal compounds
See Molybdenum compounds
Niobium compounds
Rhenium compounds

Refractory metals
See Chromium
Molybdenum
Niobium
Tantalum
Tungsten
Vanadium

Relaxation
See Stress relaxation

Remelting
See Melting

Renn furnace
See Direct reduction

Replicast process
See Investment casting

Residual stress
Deformation-Induced Residual Stress Changes in SiC Whisker-Reinforced 6061 Aluminum Composites. 187-196A
A Study of Subsurface Crack Initiation Produced by Rolling Contact Fatigue. 351-359A
X-Ray Elastic Constants in Textured Zirconium-Base Materials. 389-396A
Residual Strain Gradient Determination in Metal Matrix Composites by Synchrotron X-Ray Energy Dispersive Diffraction. 1117-1124A
Computer Simulation of Martensitic Transformations in Constrained, Two-Dimensional Crystals Under External Stress. 1281-1294B
Particulate Fracture During Deformation of a Spray Formed Metal-Matrix Composite. 1575-1588A
Layer Thickness Effect on Ductile Tensile Fracture of Ultrahigh Carbon Steel—Brass Laminates. 1647-1653A
Small Fatigue Crack Behavior in 7075-T651 Aluminum as Monitored With Rayleigh Wave Reflection. 1773-1783A
Diffusion Bonding of Silicon Nitride to Austenitic Stainless Steel Without Interlayers. 1835-1843A
Residual Stress Measurements by X-Ray Diffraction in the Ferritic/Austenitic Interface Weldment. 2095-2106A
Residual Stresses and Their Effects on Deformation in Particle-Reinforced Metal-Matrix Composites. 2487-2496A
Time Dependence of Internal Friction and Shape Change in Cu—Zn—Al Shape Memory Alloys. 2743-2749A

Residual stress, Heating effects
Mathematical Model of Phase Transformations and Elasto—Plastic Stress in the Water Spray Quenching of Steel Bars. 795-808A

Resins
See Polymers

Resistance
See Corrosion resistance

Resistance welds
See Welded joints

Resistivity
Measurement of Solid Solubility of Germanium in Aluminum. 277-282A
Measurement of Electronic Conduction in Cryolite Alumina Melts and Estimation of Its Effect on Current Efficiency. 729-735B

Resistivity, Deformation effects
Strength and Electrical Conductivity of a Deformation-Processed Cu—5 vol.% Nb Composite. (Conference Paper) 7-14A
Strength and Electrical Conductivity of Deformation-Processed Cu—15 Vol% Fe Alloys Produced by Powder Metallurgy Techniques. (Conference Paper) 35-42A

Resistivity, Microstructural effects
High-Strength High-Conductivity Cu—Nb Microcomposite Sheet Fabricated via Multiple Roll Bonding. (Conference Paper) 15-20A
Deformation-Processed Wire Prepared From Gas-Atomized Cu—Nb Alloy Powders. (Conference Paper) 21-26A
Electrical Conductivity in Directionally Solidified Pb—9Cu and Pb—20Cu Alloys. 975-979A
Electrical Conductivity and Microstructure of Aluminum Alloys. 2355-2358A

Resistivity, Stress effects
Damping Characteristics of TiNi Shape Memory Alloys. 2189-2194A

Resonance testing
See Ultrasonic testing

Revaporization
See Vaporizing

Rhenium compounds, Synthesis
Standard Enthalpies of Formation of NbB_2, MoB, and ReB_2 by High-Temperature Direct Synthesis Calorimetry. 947-950A

Rheocasting
Elaboration of Metal Matrix Composites From Thixotropic Alloy Slurries Using a New Magnetohydrodynamic Caster. 493-510B

Rheological properties
See Viscoelasticity
Viscoplasticity
Viscosity

Ribbons (metallic)
See Tapes (metallic)

Roasting
See Sintering (roasting)

Rockwell hardness, Microstructural effects
Effects of Processing on the Transverse Fatigue Properties of Low-Sulfur AISI 4140 Steel. 2701-2708A

Roll bonding
High-Strength High-Conductivity Cu—Nb Microcomposite Sheet Fabricated via Multiple Roll Bonding. (Conference Paper) 15-20A

Roll forming
Effect of Changing Strain Paths on Forming Limit Diagrams of Aluminum 2008-T4. 2503-2512A

Roll pressing
See Rolling

Rolling
See also Cold rolling
Hot rolling
Shear Rate Thickening Flow Behavior of Semisolid Slurries. 1107-1116A

Rolling, Alloying effects
Strength and Electrical Conductivity of a Deformation-Processed Cu—5 vol.% Nb Composite. (Conference Paper) 7-14A

Rotary induction furnaces
See Electric induction furnaces

Rotary press forging
See Press forging

Rotating beam fatigue tests
See Fatigue tests

Rotors, Materials selection
Temperature-Induced Transition in Ductile Fracture Appearance of a Nitrogen-Strengthened Austenitic Stainless Steel. 2521-2529A

Rotors, Mechanical properties
Effects of Hydrogen on the Mixed Mode I/III Toughness of a High-Purity Rotor Steel. 1450-1451B

Roughing (rolling)
See Hot rolling

Roughness, Stress effects
A Theoretical Evaluation of Crack Closure. 2225-2232A

Rupture strength
See Creep rupture strength

Ruthenium base alloys, Mechanical properties
Mechanical and Oxidation Properties of AlRu-Based High-Temperature Alloys. 759-763A

Ruthenium compounds, Mechanical properties
Boron and Off-Stoichiometry Effects on the Strength and Ductility of AlRu. 227-230A

Salt (sodium chloride)
See Sodium chloride

Sand casting
Mechanisms of Porosity Formation During Solidification: a Theoretical Analysis. 349-364B
Evolution of Porosity in Long Freezing Range Alloys. 365-377B

Sand casting, Alloying effects
Thermodynamic Properties of Zinc-Rich Zinc—Aluminum Melts. 1037-1044B

Sap process
See Dispersion hardening

Sapphire, Composite materials
Interfacial Shear Strength of Cast and Directionally Solidified NiAl—Sapphire Fiber Composites. 2119-2125A

SAW
See Submerged arc welding

Scandium, Alloying elements
Boron and Off-Stoichiometry Effects on the Strength and Ductility of AlRu. 227-230A

Scanning electron microscopy
Orientation Imaging: the Emergence of a New Microscopy. 819-831A
The Oxidation of Ilmenite and Its Relationship to the FeO—Fe_2O_3—TiO_2 Phase Diagram at 1073 and 1140K. 1257-1264B
Fracture Morphology of NiAl Single Crystals Tested in Tension. 1363-1371B

Scanning transmission electron microscopy
See Scanning electron microscopy

Scattering
See Backscattering

Schottky defect
See Lattice vacancies

Schottky effect
See Work functions

Scrap steel
See Steel scrap

Screw dislocations
An Analytical Description for the Deformation Response of Ni_3Al Alloys in the Anomalous Regime. 397-401A
The Role of Mobile Dislocations in the Nucleation of Brittle Fracture. (Conference Paper) 545-552A

Season cracking
See Stress corrosion cracking

Secondary ion mass spectroscopy
Compositional Changes in Aluminum—Lithium-Base Alloys Caused by Oxidation. 2279-2288A

Secondary recrystallization, Heating effects
The Effect of Wire History on the Coarsened Substructure and Secondary Recrystallization of Doped Tungsten. 843-851A

Seeding
See Nucleation

Seeding (inoculation)
See Inoculation

Segregations
Modeling of Solute Redistribution in the Mushy Zone During Solidification of Aluminum—Copper Alloys. 963-973A
Auger Electron Spectroscopy Study of Grain Boundary Segregation in Alloy K-500. I. Behavior in As-Processed State. 1897-1907A
Synthesis of Bulk and Reinforced Nickel Aluminides by Reactive Infiltration. 2161-2170A

Segregations, Cooling effects
Numerical Simulation of Solidification of Molten Aluminum Alloys in Cylindrical Molds. 677-684B
The Solidification Behavior of 8090 Al—Li Alloy. 857-865B
An Analytical Model for Solute Redistribution During Solidification of Planar, Columnar, or Equiaxed Morphology. 2107-2118A
Synthesis of TiC Particulates and Their Segregation During Solidification in In Situ Processed Al—TiC Composites. 2358-2362A

Segregations, Deformation effects
Calculation of Dendrite Settling Velocities Using a Porous Envelope. 749-753B

Segregations, Field effects
Thermosolutal Convection and Macrosegregation Caused by Solute Rejection at Cell/Dendrite Tips. 1661-1669A

Segregations, Heating effects
Auger Electron Spectroscopy Study of Grain Boundary Segregation in Alloy K-500. II. Behavior in Slow Strain Rate Tensile Test. 1909-1917A

Segregations, Welding effects
Microstructural Characterization of Incoloy 903 Weldments. 1169-1179A

Self diffusion
See Diffusion

Semiconductors
See Germanium
Silicon
Tellurium

Semicontinuous casting
See Continuous casting

Semikilling
See Deoxidizing

Sensible heat
See Enthalpy

Sensitivity
See Notch sensitivity

Service life, High temperature effects
Thermal Conductivity and Thermal Expansion of Graphite Fiber-Reinforced Copper Matrix Composites. (Conference Paper) 43-52A
Reaction Layer Formation at the Graphite/Copper—Chromium Alloy Interface. (Conference Paper) 53-60A

Shape memory
See also Springback

Shape memory, Stress effects
Internal Friction Due to Thermoelastic Martensitic Transformation. 1067-1071A
Damping Characteristics of TiNi Shape Memory Alloys. 2189-2194A

Shape memory alloys, Phase transformations
Martensitic-Transformation Sequence in a $Ti_{50}Ni_{47}Pd_3$ Alloy. 1205-1208A
Time Dependence of Internal Friction and Shape Change in Cu—Zn—Al Shape Memory Alloys. 2743-2749A

Shape memory alloys, Rolling
Determination of Heat of Transformation in a Cold-Rolled Martensitic TiNi Alloy. 293-299A

Shaping
See Near net shaping

Shear bands
See Luders lines

Shear modulus, Stress effects
On the Development of Constitutive Relations for Metallic Powders. 2071-2081A

Shear properties
See also Shear modulus
Shear strength
Shear stress

Shear properties, Microstructural effects
Microstructural Study of Adiabatic Shear Band Formed by Ballistic Impact in an HY-100 Steel. 2217-2224A

Shear properties, Temperature effects
Temperature-Induced Transition in Ductile Fracture Appearance of a Nitrogen-Strengthened Austenitic Stainless Steel. 2521-2529A

Shear strength
Shear Rate Thickening Flow Behavior of Semisolid Slurries. 1107-1116A

Shear strength, Deformation effects
Interfacial Shear Strength of Cast and Directionally Solidified NiAl—Sapphire Fiber Composites. 2119-2125A

Shear strength, Stress effects
Evolution of Damage and Plasticity in Titanium-Based, Fiber-Reinforced Composites. 1597-1610A
Diffusion Bonding of Silicon Nitride to Austenitic Stainless Steel Without Interlayers. 1835-1843A

Shear stress
On the Development of Constitutive Relations for Metallic Powders. 2071-2081A

Shear stress, High temperature effects
High-Temperature Creep of the Intermetallic Alloy Ni_3Al. 335-341A

Shear stress, Orientation effects
The Mechanical Behavior of Directionally Solidified Al—Ni in Compression. 713-719A

Sheet metal
See also Strip

Sheet metal, Bonding
High-Strength High-Conductivity Cu—Nb Microcomposite Sheet Fabricated via Multiple Roll Bonding. (Conference Paper) 15-20A

Sheet metal, Brazing
Microstructural Control in an Aluminum Core Alloy for Brazing Sheet Applications. 1935-1942A

Sheet metal, Coating
Direct Viscoelastic Strain Relaxation Measurements With Interference Microscopy: Analysis of Sheet Metal Polymer Coatings. 1678-1681A

Sheet metal, Mechanical properties
Strain Path Change Effects in the Local Necking of Aluminum Sheet and in the Tension of Internally Pressurized Tubes. 2691-2699A

Sheet metal, Metal working
A Better Sheet Formability Test. 1143-1151A
Effect of Changing Strain Paths on Forming Limit Diagrams of Aluminum 2008-T4. 2503-2512A

Sheet metal, Microstructure
Determination of the Total Texture Function From Individual Orientation Measurements by Electron Backscattering Pattern. 2299-2311A

Sheet metal, Phase transformations
Computer Simulation of VC Precipitation at Moving γ/α Interfaces. 2195-2207A

Sheet steel
See Strip steel

Sherritt Gordon process
See Hydrometallurgy
Powder technology

Shielded arc welding
See Shielded metal arc welding

Shielded metal arc welding
Residual Stress Measurements by X-Ray Diffraction in the Ferritic/Austenitic Interface Weldment. 2095-2106A

Short range order, Heating effects
Transformation to Ni_5Al_3 in a 63.0 At.% Ni—Al Alloy. 83-94A

Shrinkage
Modeling of Solute Redistribution in the Mushy Zone During Solidification of Aluminum—Copper Alloys. 963-973A

Shrinkage, Alloying effects
The Effect of Sodium and Strontium Modification on Surface Tension and Volumetric Shrinkage of A356 Alloy and Their Influence on Porosity Formation. 1055-1063B

Shrinkage, Coating effects
Evolution of Porosity in Long Freezing Range Alloys. 365-377B

Shrinkage, Cooling effects
Mechanisms of Porosity Formation During Solidification: a Theoretical Analysis. 349-364B

Silicides, Composite materials
On the Flow Behavior of Constrained Ductile Phases. 403-415A
Strength, Fracture, and Fatigue Behavior of Advanced High-Temperature Intermetallics Reinforced With Ductile Phases. (Conference Paper) 585-600A

Silicides, Mechanical properties
Magnesium Silicide Intermetallic Alloys. 2383-2391A

Silicon, Alloying additive
Motions of Alloying Additions in the CAS Steelmaking Operations. 649-655B

Silicon, Alloying elements
Strength and Toughness of a Nb/Nb_5Si_3 Composite. 501-504A
Motions of Alloying Additions During Furnace Tapping in Steelmaking Processing Operations. 639-648B
The Effect of Sodium and Strontium Modification on Surface Tension and Volumetric Shrinkage of A356 Alloy and Their Influence on Porosity Formation. 1055-1063B
Phase Chemistry and Precipitation Reactions in Maraging Steels. IV. Discussion and Conclusions. 1251-1256B
Effects of Silicon Addition on the First Stage of Precipitation in the Al—1.52% Cu—0.75% Mg Alloy. 2181-2187A
Extent of Depression in Eutectic Temperature at Two Levels of Silicon in Al—Si—Mg Alloys Processed at Different Cooling Rates. 2810-2812A

Silicon, Ternary systems
Thermodynamics of Si—C—O System. 1212-1214A

Silicon carbide, Composite materials
Deformation-Induced Residual Stress Changes in SiC Whisker-Reinforced 6061 Aluminum Composites. 187-196A
Stress Distribution in Particulate-Reinforced Metal-Matrix Composites Subjected to External Load. 197-207A
Elaboration of Metal Matrix Composites From Thixotropic Alloy Slurries Using a New Magnetohydrodynamic Caster. 493-510B
Failure Mechanisms in SiC-Fiber Reinforced 6061 Aluminum Alloy Composites Under Monotonic and Cyclic Loading. 721-734A
Adiabatic Shear Band Formation in Al—SiC_w Composites. 895-900A
Strain-Rate Effects on High-Temperature Fracture Behavior of a 2124Al—SiC_w Composite. 1125-1131A
Failure Diagrams for Unidirectional Fiber Metal-Matrix Composites. 1531-1542A
Correction to "Failure Diagrams for Unidirectional Fiber Metal-Matrix Composites". 1531-1542A
Particulate Fracture During Deformation of a Spray Formed Metal-Matrix Composite. 1575-1588A
Evolution of Damage and Plasticity in Titanium-Based, Fiber-Reinforced Composites. 1597-1610A
Effect of Melt Cleanliness on the Properties of an Al—10 wt.% Si—10 vol.% SiC(p) Composite. 1631-1645A
The Reduced Pressure Test as a Measuring Tool in the Evaluation of Porosity/Hydrogen Content in Al—7 wt.% Si—10 vol.% SiC(p) Metal Matrix Composite. 1857-1868A
Influence of Thermally Induced Plasticity on the Bauschinger Effect of SiC/Al Composites. 1879-1882A
Theoretical Calculation of Anisotropic Creep and Stress—Strain Behavior for a Class of Metal-Matrix Composites. 2049-2059A
Effects of Heat Treatment and Reinforcement Size on Reinforcement Fracture During Tension Testing of a SiC_p Discontinuously Reinforced Aluminum Alloy. 2531-2543A

Silicon compounds
See Silicides
Silicon carbide
Silicon nitride

Silicon nitride, Welding
Diffusion Bonding of Silicon Nitride to Austenitic Stainless Steel Without Interlayers. 1835-1843A

Silver, Extraction
Kinetics of the Dissolution of Pure Silver and Silver—Gold Alloys in Nitric Acid Solution. 827-837B
A Mathematical Model for Heap Leaching of One or More Solid Reactants From Porous Ore Pellets. 1087-1102B

Silver, Mechanical properties
Discussion of "Void Nucleation in Constrained Silver Interlayers" and "Void Growth and Coalescence in Constrained Silver Interlayers". 1877-1878A
Authors' Reply [to Discussion of "Void Nucleation in Constrained Silver Interlayers" and "Void Growth and Coalescence in Constrained Silver Interlayers"]. 1878-1879A

Silver, Recovering
Thermodynamic Activity of Antimony at Dilute Solutions in Carbon-Saturated Liquid Iron. 963-973B

Silver, Reduction (chemical)
The Mineralogical Characterization of Tellurium in Copper Anodes. 997-1007B

Silver, Refining
^{197}Au Mössbauer Study of Copper Refinery Anode Slimes. 457-462B

Silver, Ternary systems
Thermochemistry of Binary and Ternary Noble Metal Alloys: the Systems Cu—Ce, Ag—Ce, Au—Ce, Cu—Ag—Au, and Ce—Ag—Au. 1827-1834A

Silver base alloys, Corrosion
Stress Corrosion Cracking of Ag—20Au in $HClO_4$, $AgClO_4$, and KCl Solutions by Surface Mobility. 425-433A

Silver base alloys, Reactions (chemical)
Thermodynamic Properties of the BaO—MnO Flux System. 333-337B

Simulation
See also Computer simulation
Correction to "Planar to Equiaxed Transition in the Presence of an External Wetting Surface". 3361-3368A

Single crystals, Mechanical properties
The Stresses in a Face-Centered Cubic Single Crystal Under Uniaxial Tension. 875-881A
Large Deformation Simple Compression of a Copper Single Crystal. 989-992A

Single crystals, Metallography
Fracture Morphology of NiAl Single Crystals Tested in Tension. 1363-1371B

Sinter (material), Microstructure
Microstructural Changes on the Reduction of Imperial Smelting Furnace Sinters. 39-51B

Sintering
See Sintering (powder metallurgy)
Sintering (roasting)

Sintering (powder metallurgy)
See also Activated sintering
Liquid phase sintering
The Role of Inclusion and Pore Content on the Fracture Toughness of Powder-Processed Blended Elemental Titanium Alloys. 161-174A
Synthesis of Surface Pores in a Bronze—Graphite Composite Using Electron Beam Surface Melting. 230-233A
A Stereological Model of the Degree of Grain Boundary-Pore Contact During Sintering. 1497-1505A

Sintering (roasting)
Experimental and Theoretical Analysis of Zinc Updraft Sintering. 27-38B

Skull casting
See Casting

Slab casting
Modeling of Steel Grade Transition in Continuous Slab Casting Processes. 379-393B
Real-Time Simulation of Heat Transfer in Continuous Casting. 685-693B
Inclusion Behavior and Heat-Transfer Phenomena in Steelmaking Tundish Operations. II. Mathematical Model for Liquid Steel in Tundishes. 767-777B

Slabbing (rolling)
See Rolling

Slabs, Rolling
Fundamental Phenomena Governing Heat Transfer During Rolling. 1307-1320B

Slags
See also Blast furnace slags
The Reduction Mechanism of Chromite in the Presence of a Silica Flux. 987-995B

Slags, Phases (state of matter)
Critical Evaluation and Optimization of the Thermodynamic Properties and Phase Diagrams of the MnO—TiO_2, MgO—TiO_2, FeO—TiO_2, Ti_2O_3—TiO_2, Na_2O—TiO_2, and K_2O—TiO_2 Systems. 795-805B

Sliding friction, Composition effects
Tribological Characteristics of Aluminum—50 Vol.% Graphite Composite. 151-159A

Sling casting
See Centrifugal casting

Slip
A Transgranular Fatigue Crack Growth Model Based on Restricted Slip Reversibility. 1373-1380B
Intrinsic Fatigue Crack Growth Rates for Al—Li—Cu—Mg Alloys in Vacuum. 1807-1817A

Slurries, Metal working
Shear Rate Thickening Flow Behavior of Semisolid Slurries. 1107-1116A

SMAW
See Shielded metal arc welding

Smelting
See also Flash smelting
Experimental and Theoretical Analysis of Zinc Updraft Sintering. 27-38B
Microstructural Changes on the Reduction of Imperial Smelting Furnace Sinters. 39-51B
Quantitative Method for Silica Flux Evaluation. 63-73B
A Mössbauer Study of the Behavior of Iron Cations in Iron Oxide-Containing Melts at 1400°C. 101-111B
The Solubility of Copper in Lime-Saturated and Calcium Ferrite-Saturated Liquid Iron Oxide. 265-269B
Gaseous Reduction of Laterite Ores. 271-295B
Activities in Cu_2S—FeS—SnS Melts at 1200°C. 301-308B
Desulfurization of Bath Smelter Metal. 441-447B
Zinc Smelting With Coal as the Principal Heat Source and Reducing Agent. 593-598B
Experimental Investigations of Dissolution Rates of Carbonaceous Materials in Liquid Iron—Carbon Melts. 629-638B
Surface and Interfacial Tension of the Ni—Fe—S, Ni—Cu—S, and Fayalite Slag Systems. 657-668B
Oxygen and Sulfur Solubilities in Ni—Fe—S—O Melts. 847-856B
The Mineralogical Characterization of Tellurium in Copper Anodes. 997-1007B
An Improved Computer Program for Equilibrium Calculations. 1882-1889A

Smelting, Temperature effects
Sn—C and Al—Sn—C Phase Diagrams and Thermodynamic Properties of Carbon in the Alloys: 1550-2300°C. 53-58B

Smoothness
Surface Preparation and Bend Ductility of NiAl. 2593-2596A

Sodium, Alloying elements
The Effect of Sodium and Strontium Modification on Surface Tension and Volumetric Shrinkage of A356 Alloy and Their Influence on Porosity Formation. 1055-1063B

Sodium, Reactions (chemical)
Penetration and Chemical Reactions in Carbon Cathodes During Aluminum Electrolysis. I. Laboratory Experiments. 75-89B
A Study of Ion Activities in Ionic Solutions. 317-323B

Sodium chloride, Environment
Effect of Microstructure on the Corrosion and Deformation Behavior of a Newly Developed 6Mn—5Cr—1.5Cu Corrosion-Resistant White Iron. 445-457A
Environmentally Assisted Cracking of Two-Phase Iron—Manganese—Aluminum Alloys in NaCl Solution. 459-464A
A Mechanism for Transgranular Stress-Corrosion Cracking. (Conference Paper) 553-559A

Sodium compounds
See Sodium chloride

Soft annealing
See Annealing

Solid phases
Calculation of Sulfide Capacities of Multicomponent Slags. 817-825B
The Mineralogical Characterization of Tellurium in Copper Anodes. 997-1007B
Metastable Crystalline and Amorphous Structures Formed in the Cu—W System by Vapor Deposition. 1027-1037A
On the Anchoring of Solids at Curved Fluid Interfaces. 1673-1677A
Correction to "On the Anchoring of Solids at Curved Fluid Interfaces". 1673-1677A
Microstructural Control in an Aluminum Core Alloy for Brazing Sheet Applications. 1935-1942A

Solid phases, Alloying effects
The Activity of $CuO_{0.5}$ Along the Air Isobars in the Systems Cu—O—SiO_2 and Cu—O—CaO at 1300°C. 59-62B

Solid phases, Composition effects
Measurement of Solid Solubility of Germanium in Aluminum. 277-282A

Solid phases, Cooling effects
Study of the Mechanism of Grain Refinement of Aluminum After Additions of Titanium- and Boron-Containing Master Alloys. 481-491A
Numerical Simulation of Solidification of Molten Aluminum Alloys in Cylindrical Molds. 677-684B
Real-Time Simulation of Heat Transfer in Continuous Casting. 685-693B
The Solidification Behavior of 8090 Al—Li Alloy. 857-865B
Phase Selection in Undercooled Ti_3Sn Melts. 1481-1496A
An Analytical Model for Solute Redistribution During Solidification of Planar, Columnar, or Equiaxed Morphology. 2107-2118A

Solid phases, Field effects
Interdendritic Eutectic Solidification of an AlSi-7.0 Alloy Under Microgravity. 208-212B
Thermosolutal Convection and Macrosegregation Caused by Solute Rejection at Cell/Dendrite Tips. 1661-1669A

Solid phases, Heating effects
Dilatometric Technique for Evaluation of the Kinetics of Solid-State Transformation of Maraging Steel. 2653-2656A

Solid phases, High temperature effects
Formation of $L1_2$-Structured Ni_3Si. 283-292A

Solid phases, Pressure effects
Mechanisms of Heterogeneous Nucleation of Pores in Metals and Alloys. 1845-1856A

Solid phases, Temperature effects
The Glass—Liquid and Solid—Jelly Transition Temperatures. 309-315B
A Thermodynamic Evaluation of the Fe—Mn—N System. 629-645A
Hydrogen Probe Equipped With $SrCeO_3$-Based Proton Conductor and Ca/CaH_2 Reference Electrode. 789-794B
Critical Evaluation and Optimization of the Thermodynamic Properties and Phase Diagrams of the CaO—Al_2O_3, Al_2O_3—SiO_2, CaO—Al_2O_3—SiO_2 Systems. 807-816B
Calorimetrically Measured Enthalpies for the Reaction of $H_2(D_2)$ (g) With Titanium and Ti—Ni Alloys at 323K. 867-873B
A Thermodynamic Evaluation of the Fe—Cr—Mn—C System. 1017-1025A
Thermodynamic Study of the NiO—MgO System in the Temperature Range 1073-1473K by a Galvanic Cell Technique. 1023-1030B
Simulation of Metal Solidification Using a Cellular Automaton. 1045-1053B
Phase Diagram of the Bi_2O_3—SrO—CaO Quasiternary System. 1447-1449B
Phase Relations in the System Cu—Gd—O and Gibbs Energy of Formation of $CuGd_2O_4$. 1655-1660A
Thermochemistry of Binary and Ternary Noble Metal Alloys: the Systems Cu—Ce, Ag—Ce, Au—Ce, Cu—Ag—Au, and Ce—Ag—Au. 1827-1834A
An Experimental Study and Thermodynamic Evaluation of the Fe—Mo—Ti System at 1000°C. 2137-2144A
Thermodynamic Analysis and Evaluation of the Fe—Cr—Mn—N System. 2393-2409A
Mechanism of TiC Formation in Al/TiC In Situ Metal-Matrix Composites. 2803-2805A

Solid phases, Welding effects
Effect of Activity Differences on Hydrogen Migration in Dissimilar Titanium Alloy Welds. 2763-2771A

Solid solubility
Microstructure-Property Relationships in Low-Density Al—Li—Mg Alloys. 853-863A

Solid solubility, Composition effects
Measurement of Solid Solubility of Germanium in Aluminum. 277-282A

Solid solubility, Microstructural effects
High-Strength High-Conductivity Cu—Nb Microcomposite Sheet Fabricated via Multiple Roll Bonding. (Conference Paper) 15-20A

Solid state, Temperature effects
Liquidus Temperatures in the Ti—Al System. 61-66A

Solidification
See also Directional solidification
Rapid solidification
Three-Dimensional Probabilistic Simulation of Solidification Grain Structures: Application to Superalloy Precision Castings. 467-479A
Study of the Mechanism of Grain Refinement of Aluminum After Additions of Titanium- and Boron-Containing Master Alloys. 481-491A
Numerical Simulation of Solidification of Molten Aluminum Alloys in Cylindrical Molds. 677-684B
Calculation of Dendrite Settling Velocities Using a Porous Envelope. 749-753B
Interfacial Phenomena in the Reactions of Al—B, Al—Ti—B, and Al—Zr—B Alloys With KF—AlF_3 and NaF—AlF_3 Melts. 947-953B
Modeling of Solute Redistribution in the Mushy Zone During Solidification of Aluminum—Copper Alloys. 963-973A
Solidification and Solid-State Transformation Mechanisms in Silicon Alloyed High-Chromium White Cast Irons. 981-988A
Simulation of Metal Solidification Using a Cellular Automaton. 1045-1053B

Determination of Interfacial Heat Transfer Coefficients in Casting and Quenching Using a Solution Technique for Inverse Problems Based on the Boundary Element Method. 1077-1086B
A Model for the Graphite Formation in Ductile Cast Iron. I. Inoculation Mechanisms. 2321-2345A
Synthesis of TiC Particulates and Their Segregation During Solidification in In Situ Processed Al—TiC Composites. 2358-2362A
Magnesium Silicide Intermetallic Alloys. 2383-2391A
Design and Development of Hot Corrosion-Resistant Nickel-Base Single-Crystal Superalloys by the d-Electrons Alloy Design Theory. II. Effects of Refractory Metals Titanium, Tantalum, and Niobium on Microstructures and Properties. 2451-2464A
Numerical Simulation of the Infiltration of Fibrous Preforms by a Pure Metal. 2667-2678A

Solidification, Alloying effects
The Effect of Sodium and Strontium Modification on Surface Tension and Volumetric Shrinkage of A356 Alloy and Their Influence on Porosity Formation. 1055-1063B
Extent of Depression in Eutectic Temperature at Two Levels of Silicon in Al—Si—Mg Alloys Processed at Different Cooling Rates. 2810-2812A

Solidification, Cooling effects
A Stereological Formulation for the Source Team in Micromodels of Equiaxed Eutectic Solidification. 539-542B
The Solidification Behavior of 8090 Al—Li Alloy. 857-865B
An Analytical Model for Solute Redistribution During Solidification of Planar, Columnar, or Equiaxed Morphology. 2107-2118A
A Multiphase Solute Diffusion Model for Dendritic Alloy Solidification. 2787-2802A

Solidification, Temperature effects
Liquidus Temperatures in the Ti—Al System. 61-66A

Solubility
See also Solid solubility
The Solubility of Copper in Lime-Saturated and Calcium Ferrite-Saturated Liquid Iron Oxide. 265-269B
Oxygen and Sulfur Solubilities in Ni—Fe—S—O Melts. 847-856B

Solubility, Alloying effects
The Activity of $CuO_{0.5}$ Along the Air Isobars in the Systems Cu—O—SiO_2 and Cu—O—CaO at 1300°C. 59-62B
The Measurement of the Surface Tension of Molten Fe—3.52% C—2.02% Si(—Al,—Ti,—N) Alloys by the Maximum Bubble Pressure Method. 200-203B
Solubility and Thermodynamic Properties of Li_2O in LiF—CaF_2 Melts. 1031-1035B
The Effect of Trace-Titanium Content on the Solubility of Niobium and the Consequent Properties of Niobium-Bearing Steels. 2127-2130A
Effects of Silicon Addition on the First Stage of Precipitation in the Al—1.52% Cu—0.75% Mg Alloy. 2181-2187A

Solubility, Environmental effects
Calorimetrically Measured Enthalpies for the Reaction of Hafnium With $H(D)_2$ (g). 2623-2627A

Solubility, High temperature effects
Phase Equilibria Effect on the Enhanced Liquid Phase Sintering of Tungsten—Copper. 2369-2377A

Solubility, Temperature effects
A Thermodynamic Evaluation of the Fe—Mn—N System. 629-645A
Hydrogen Probe Equipped With $SrCeO_3$-Based Proton Conductor and Ca/CaH_2 Reference Electrode. 789-794B
An Experimental Study and Thermodynamic Evaluation of the Fe—Mo—Ti System at 1000°C. 2137-2144A
Thermodynamic Analysis and Evaluation of the Fe—Cr—Mn—N System. 2393-2409A

Solution annealing
The Microstructure of Discontinuously Precipitated Lamellae in an Austenitic Fe—42.4 wt.% Ni—4.15 wt.% Al—0.45 wt.% C Alloy. 1039-1047A
Surface Hardening of Ti—6Al—4V Alloy by Electrochemical Hydrogenation. 1181-1185A
The Effect of Nickel, Chromium, and Primary Alpha Phase on the Creep Behavior of Ti—6242Si. 1819-1826A

Solution entropy
See Entropy
Heat of solution

Solution heat treatment
See also Solution annealing
Age-Hardening Behavior of Titanium Alloy Ti—6Al—5Zr—0.5Mo—0.25Si. 763-766A
Microstructural Characterisation of Near-α Titanium Alloy Ti—6Al—4Sn—4Zr—0.70Nb—0.50Mo—0.40Si. 1273-1280B
Composition and Stability of Ω Phase in an Al—Cu—Mg—Ag Alloy. 1461-1470A
The Dendritic Growth of γ' Precipitates and Grain Boundary Serration in a Model Nickel-Base Superalloy. 1733-1743A
The Morphological Changes of γ' Precipitates in a Ni—8Al (at.%) Alloy During Their Coarsening. 1975-1981A
Microstructure and Hydrogen Effects on Fracture in the Alloy A-286. 1983-1991A
Design and Development of Hot Corrosion-Resistant Nickel-Base Single-Crystal Superalloys by the d-Electrons Alloy Design Theory. II. Effects of Refractory Metals Titanium, Tantalum, and Niobium on Microstructures and Properties. 2451-2464A
Effects of Heat Treatment and Reinforcement Size on Reinforcement Fracture During Tension Testing of a SiC_p Discontinuously Reinforced Aluminum Alloy. 2531-2543A
Precipitation Hardening in Nickel—Copper Base Alloy Monel K500. 2709-2719A
Kinetics of Grain Growth in the Weld Heat-Affected Zone of Alloy 718. 2773-2785A

Solution potential
See Corrosion potential

Solvent extraction
The Separation of Nickel and Cobalt in a Mixed Sulfide Precipitate. 189-192B
Characterization of Neodymium Oxalate Precipitated From 2-Ethylhexyl Phosphonic Acid Mono-2-Ethylhexyl Ester Solution. 537-538B
Kinetics of the Dissolution of Pure Silver and Silver—Gold Alloys in Nitric Acid Solution. 827-837B
A Mathematical Model for Heap Leaching of One or More Solid Reactants From Porous Ore Pellets. 1087-1102B

Solvent extraction, pH effects
Extraction of Zinc Chloride With Dibutyl Butylphosphonate. 11-15B

Solvus (metallurgical)
See Solid solubility

Sorption
See Adsorption
Desorption

Space ships
See Spacecraft

Space vehicles
See Spacecraft

Spacecraft, Materials selection
A Real-Time Gravimetric Instrument for Combustion Studies of Metallic Materials. 395-397B

Specific density
See Density

Specific gravity
See Density

Specific heat
A Stereological Formulation for the Source Team in Micromodels of Equiaxed Eutectic Solidification. 539-542B
Solidification of Pure Metal in Imperfect Contact With a Mold. 542-544B
Simulation of Metal Solidification Using a Cellular Automaton. 1045-1053B
Numerical Simulation of the Infiltration of Fibrous Preforms by a Pure Metal. 2667-2678A

Specific heat, Alloying effects
A Model for the Thermal Properties of Liquid-Phase Sintered Composites. 1745-1752A

Specific heat, Deformation effects
Computer Simulation of the Forging of Fine Grain IN-718 Alloy. 2061-2071A

Specific heat, Orientation effects
Thermal Conductivity and Thermal Expansion of Graphite Fiber-Reinforced Copper Matrix Composites. (Conference Paper) 43-52A

Specific heat, Temperature effects
The Glass—Liquid and Solid—Jelly Transition Temperatures. 309-315B

Specific resistance
See Resistivity

Specific volume
See Density

Specific weight
See Density

Spectral emissivity, Cooling effects
Optical Properties and Spectral Emissivities at 623.8 nm in the Titanium—Aluminum System. 67-72A

Spectrochemical analysis
See Spectroscopy

Spectrography
See Spectroscopy

Spectrometry
See Spectroscopy

Spectroscopic analysis
See Spectroscopy

Spectroscopy
The Oxidation of Ilmenite and Its Relationship to the FeO—Fe_2O_3—TiO_2 Phase Diagram at 1073 and 1140K. 1257-1264B

Speed
See Velocity

Spelter
See Zinc

Spheroidal graphite
See Nodular graphitic structure

Spheroidal iron
See Nodular iron

Spheroidal structure
See Nodular graphitic structure

Spheroidizing
Microstructural Changes in As-Cast M2 Grade High Speed Steel During Hot Forging. 2171-2180A
Kinetics of Grain Growth in the Weld Heat-Affected Zone of Alloy 718. 2773-2785A

Spin casting
See Centrifugal casting

Sponge iron
See Direct reduced iron

Sponginess
See Porosity

Spot welding
The Effects of Process Variables on Pulsed Nd:YAG Laser Spot Welds. I. AISI 409 Stainless Steel. 1065-1076B

Spray forming
Particulate Fracture During Deformation of a Spray Formed Metal-Matrix Composite. 1575-1588A

Spray forming, Cooling effects
Spray Deposition of a Sn—40 wt.% Pb Alloy With Uniform Droplets. 1187-1193A

Spray quenching
Mathematical Model of Phase Transformations and Elasto—Plastic Stress in the Water Spray Quenching of Steel Bars. 795-808A

Spraying
See Spray forming
Spray quenching

Springback
Springback in Simple Axisymmetric Stampings. 925-934A

Stability
See Phase stability
Thermal stability

Stacking fault energy
How Are New Orientations Generated During Primary Recrystallization?en 225-239B
How Are New Orientations Generated During Primary Recrystallization?en 1001-1015A
Creep Behavior of an Al-2.0 Wt.%.Li Alloy in the Temperature Range 300-500°C. 2001-2007A

Stacking faults
How Are New Orientations Generated During Primary Recrystallization?en 225-239B

Stacking faults, Deformation effects
Microstructural Evolution in Nickel During Rolling From Intermediate to Large Strains. 2021-2037A

Stacking faults, Heating effects
Microstructural Characterisation of Near-α Titanium Alloy Ti—6Al—4Sn—4Zr—0.70Nb—0.50Mo—0.40Si. 1273-1280B

Stainless steels
See also Austenitic stainless steels
Duplex stainless steels
Ferritic stainless steels
Martensitic stainless steels

Stainless steels, Corrosion
Environmentally Assisted Cracking of Two-Phase Iron—Manganese—Aluminum Alloys in NaCl Solution. 459-464A

Stainless steels, Microstructure
High Nitrogen Concentration in Fe—Cr—Ni Alloys. 73-82A

Stainless steels, Phase transformations
Discussion of "An Interpretation of the Carbon Redistribution Process During Aging of High-Carbon Martensite" and Authors Reply. 2585-2589A

Stainless steels, Phases (state of matter)
The Effect of Manganese on the Activities of Iron, Nickel, and Chromium in an Fe—Ni—Cr Base Alloy. 2379-2382A

Stainless steels, Reactions (chemical)
Thermodynamics of Sulfur in BaO—CaO—CO_2 System. 325-331B

Stainless steels, Steel making
The Reduction Mechanism of Chromite in the Presence of a Silica Flux. 987-995B

Stainless steels, Welding
The Effects of Process Variables on Pulsed Nd:YAG Laser Spot Welds. I. AISI 409 Stainless Steel. 1065-1076B

Stamping
See Die stamping

Stampings, Mechanical properties
Springback in Simple Axisymmetric Stampings. 925-934A

Standard reference materials
See Standards

Standards
A Real-Time Gravimetric Instrument for Combustion Studies of Metallic Materials. 395-397B
Empowerment With Knowledge—Toward the Intelligent Mold for the Continuous Casting of Steel Billets. 917-935B
A Better Sheet Formability Test. 1143-1151A

Static casting
See Casting

Static fatigue
See Creep rupture strength

Static loads
See Loads (forces)

Static pressure
See Hydrostatic pressure

Steam boilers
See Boilers

Steam generators
See Boilers

Steel constituents
See Austenite
Bainite
Cementite
Martensite

Steel converters
See Oxygen blown converters

Steel making
See also Oxygen steel making
High Nitrogen Concentration in Fe—Cr—Ni Alloys. 73-82A
How Fast Can We Go? The Status of our Knowledge of the Rates of Gas—Liquid Metal Reactions. 241-258B
Thermodynamics of Sulfur in BaO—CaO—CO_2 System. 325-331B
Thermodynamic Properties of the BaO—MnO Flux System. 333-337B
Thermodynamics of Phosphorus and Sulfur in the BaO—MnO Flux System Between 1573 and 1673K. 339-347B
Accretion Growth on Single-Pipe Tuyeres. I. Model Development and Preliminary Analysis. 571-582B
Accretion Growth on Single-Pipe Tuyeres. II. Model Results and Discussion. 583-591B
Motions of Alloying Additions During Furnace Tapping in Steelmaking Processing Operations. 639-648B
Motions of Alloying Additions in the CAS Steelmaking Operations. 649-655B
Measurement and Modeling of Turbulence in the Gas/Liquid Two-Phase Zone During Gas Injection. 695-705B
Inclusion Behavior and Heat-Transfer Phenomena in Steelmaking Tundish Operations. I. Aqueous Modeling. 755-765B
Inclusion Behavior and Heat-Transfer Phenomena in Steelmaking Tundish Operations. II. Mathematical Model for Liquid Steel in Tundishes. 767-777B
Inclusion Behavior and Heat-Transfer Phenomena in Steelmaking Tundish Operations. III. Applications—Computational Approach to Tundish Design. 779-788B
Calculation of Sulfide Capacities of Multicomponent Slags. 817-825B
Determination of Standard Gibbs Energy of Formation of Ca_3N_2. 907-909B
Empowerment With Knowledge—Toward the Intelligent Mold for the Continuous Casting of Steel Billets. 917-935B

Steel making, Quality control
Thermodynamics of Oxygen and Nitrogen in Liquid Iron Equilibrated With CaO—SiO_2—Al_2O_3 Slags. 121-130B
Thermodynamics of Nitrogen in BaO—TiO_x Melts. 131-138B

Steel scrap, Recovering
Thermodynamic Activity of Antimony at Dilute Solutions in Carbon-Saturated Liquid Iron. 963-973B

Steels
See also Carbon steels
Dual phase steels
Galvanized steels

Steels, Casting
Modeling of Steel Grade Transition in Continuous Slab Casting Processes. 379-393B
A Two-Dimensional Heat and Fluid-Flow Model of Single-Roll Continuous-Sheet Casting Process. 521-535B

Steels, Coating
Direct Viscoelastic Strain Relaxation Measurements With Interference Microscopy: Analysis of Sheet Metal Polymer Coatings. 1678-1681A

Steels, Heat treatment
Automatic Control of the Carbon Potential of Furnace Atmospheres Without Adding Enriched Gas. 881-888B
Early Stages of Decomposition in Iron—Carbon and Iron—Nitrogen Martensites: Diffraction Analysis Using Synchrotron Radiation. 1965-1973A

Steels, Mechanical properties
Ductile Fracture of Mechanically Alloyed Iron—Yttria Alloys. 681-687A
Effects of Hydrogen on the Mixed Mode I/III Toughness of a High-Purity Rotor Steel. 1450-1451B

Steels, Microstructure
Spontaneous Evolution of Microstructure in Materials. 1689-1721A

Steels, Reactions (chemical)
Thermodynamics of Nitrogen in BaO—TiO_x Melts. 131-138B

Steels, Reduction (chemical)
Determination of Standard Gibbs Energy of Formation of Ca_3N_2. 907-909B

Steels, Rolling
Influence of Strain Rate on Interpass Softening During the Simulated Warm Rolling of Interstitial-Free Steels. 1543-1553A

Steels, Structural hardening
The Effect of Trace-Titanium Content on the Solubility of Niobium and the Consequent Properties of Niobium-Bearing Steels. 2127-2130A

Stibium
See Antimony

Stick electrode arc welding
See Shielded metal arc welding

Stitch welding
See Spot welding

Stora Kaldo process
See Oxygen steel making

Storage vessels, Materials selection
Temperature-Induced Transition in Ductile Fracture Appearance of a Nitrogen-Strengthened Austenitic Stainless Steel. 2521-2529A

Strain
Dislocation Structure Evolution in Torsion of Pure Copper. 361-367A
Ductile Fracture of Mechanically Alloyed Iron—Yttria Alloys. 681-687A
Martensitic-Transformation Sequence in a $Ti_{50}Ni_{47}Pd_3$ Alloy. 1205-1208A
Microstructural Evolution in Nickel During Rolling From Intermediate to Large Strains. 2021-2037A
Residual Stresses and Their Effects on Deformation in Particle-Reinforced Metal-Matrix Composites. 2487-2496A

Effect of Changing Strain Paths on Forming Limit Diagrams of Aluminum 2008-T4. 2503-2512A

Strain, Composition effects
The Influence of Matrix Microstructure and TiC Reinforcement on the Cyclic Response and Fatigue Behavior of 2219 Aluminum. 2545-2557A

Strain, Cooling effects
Transformation Path Dependence of the Bain Strain Relaxation During Decomposition of a Hypereutectoid CuBe Alloy. 2605-2611A

Strain, Deformation effects
Strength and Electrical Conductivity of Deformation-Processed Cu—15 Vol% Fe Alloys Produced by Powder Metallurgy Techniques. (Conference Paper) 35-42A
An Analysis of Deformation, Temperature, and Microstructure for Hot-Extruded Titanium Alloy. 139-144B
Determination of Heat of Transformation in a Cold-Rolled Martensitic TiNi Alloy. 293-299A

Strain, Diffusion effects
Hydrogen Diffusion and Its Relevance to Intergranular Cracking in Nickel. 105-112A

Strain, Heating effects
The Morphological Changes of γ' Precipitates in a Ni—8Al (st.%) Alloy During Their Coarsening. 1975-1981A
Elastic Limit and Microplastic Response of Hardened Steels. 2263-2277A
Effects of Heat Treatment and Reinforcement Size on Reinforcement Fracture During Tension Testing of a SiC_p Discontinuously Reinforced Aluminum Alloy. 2531-2543A

Strain, Microstructural effects
High-Strength High-Conductivity Cu—Nb Microcomposite Sheet Fabricated via Multiple Roll Bonding. (Conference Paper) 15-20A
Deformation-Processed Wire Prepared From Gas-Atomized Cu—Nb Alloy Powders. (Conference Paper) 21-26A
Fatigue Crack Growth Through the Lamellar Microstructure of an Alloy Based on TiAl at 25 and 800°C. 1555-1574A
Characterization of Room-Temperature Damping in Aluminum—Indium Alloys. 1611-1619A

Strain, Stress effects
Stress Distribution in Particulate-Reinforced Metal-Matrix Composites Subjected to External Load. 197-207A
Residual Strain Gradient Determination in Metal Matrix Composites by Synchrotron X-Ray Energy Dispersive Diffraction. 1117-1124A
Fatigue and Creep—Fatigue Damage of Austenitic Stainless Steels Under Multiaxial Loading. 2247-2261A

Strain, Temperature effects
Temperature-Induced Transition in Ductile Fracture Appearance of a Nitrogen-Strengthened Austenitic Stainless Steel. 2521-2529A

Strain, Welding effects
Fracture Toughness Analysis of Heat-Affected Zones in High-Strength Low-Alloy Steel Welds. 1133-1141A

Strain hardening
Dislocation Structure Evolution in Torsion of Pure Copper. 361-367A

Strain hardening, Deformation effects
An Assessment of Cold Work Effects on Strain-Controlled Low-Cycle Fatigue Behavior of Type 304 Stainless Steel. 913-924A

Strain hardening, Stress effects
The Effects of Combined Strain-Path and Strain-Rate Changes in Aluminum. 2679-2689A

Strain hardening, Temperature effects
Temperature Dependence of Strain Hardening in a Dispersion-Strengthened Al—Fe—V—Si Alloy. 2589-2593A

Strain rate
Rate and Environmental Effects on Fracture of a Two-Phase TiAl-Alloy. 113-125A
Dislocation Structure Evolution in Torsion of Pure Copper. 361-367A
Cavity Distribution Pattern in a Superplastically Deformed Aluminum Alloy. 417-424A
Effects of Hydrogen on Mechanical Properties and Fracture Mechanism of 8090 Al—Li alloy. 1355-1361B

Strain rate, Alloying effects
Environmentally Assisted Cracking of Two-Phase Iron—Manganese—Aluminum Alloys in NaCl Solution. 459-464A

Strain rate, Cooling effects
Continuous Cooling Deformation Testing of Steels. 2657-2665A

Strain rate, Deformation effects
An Investigation of Superplasticity in a Thermomechanically Processed U—2Mo (α + δ) Alloy. 369-377A
The Absence of Relative Grain Translation During Superplastic Deformation of an Al—Li—Mg—Cu—Zr Alloy. 1085-1093A
A Better Sheet Formability Test. 1143-1151A
Influence of Strain Rate on Interpass Softening During the Simulated Warm Rolling of Interstitial-Free Steels. 1543-1553A
Computer Simulation of the Forging of Fine Grain IN-718 Alloy. 2061-2071A
Effect of Deformation Parameters on the No-Recrystallization Temperature in Niobium-Bearing Steels. 2151-2159A

Strain rate, Heating effects
Auger Electron Spectroscopy Study of Grain Boundary Segregation in Alloy K-500. II. Behavior in Slow Strain Rate Tensile Test. 1909-1917A
A Study of the Improvement of Superplasticity of 7075 Alloy. 2596-2598A

Strain rate, High temperature effects
Strain-Rate Effects on High-Temperature Fracture Behavior of a 2124Al—SiC_w Composite. 1125-1131A

Strain rate, Microstructural effects
An Investigation of Superplasticity in a Thermomechanically Processed U—6Nb (α + γ_2) Alloy. 379-388A
An Analytical Description for the Deformation Response of Ni_3Al Alloys in the Anomalous Regime. 397-401A
The Combined Effect of Grain Size and Strain Rate on the Dislocation Substructures and Mechanical Properties in Pure Aluminum. 1153-1161A
Microstructural Study of Adiabatic Shear Band Formed by Ballistic Impact in an HY-100 Steel. 2217-2224A
Microstructural Features of Flow Instability in α-Titanium Cylinders Under High Strain Rate Compression at 25-400°C. 2513-2520A
The Effect of Grain Size and Strain Rate On the Substructures and Mechanical Properties in Nickel 200. 2559-2568A

Strain rate, Pressure effects
Strain Path Change Effects in the Local Necking of Aluminum Sheet and in the Tension of Internally Pressurized Tubes. 2691-2699A

Strain rate, Stress effects
Cooperative Grain-Boundary Sliding in Mechanically Alloyed IN 90211 Alloy During High Strain Rate Superplasticity. 1208-1212A
Numerical Analysis of the Hot Tension Test. 2039-2047A
Theoretical Calculation of Anisotropic Creep and Stress—Strain Behavior for a Class of Metal-Matrix Composites. 2049-2059A
The Effects of Combined Strain-Path and Strain-Rate Changes in Aluminum. 2679-2689A

Strain rate, Welding effects
Microstructural Modifications in an Explosively Welded Ti/Ti Clad Material. II. Deformation Structures Around Bonding Interface. 743-750A

Strain resistance
See Deformation resistance

Stress analysis
The Stresses in a Face-Centered Cubic Single Crystal Under Uniaxial Tension. 875-881A
Critical Assessment of the Local Cleavage Stress σ_f^* in Notch Specimens of C—Mn Steel. 1381-1389B
Theoretical Calculation of Anisotropic Creep and Stress—Strain Behavior for a Class of Metal-Matrix Composites. 2049-2059A
Effects of Processing on the Transverse Fatigue Properties of Low-Sulfur AISI 4140 Steel. 2701-2708A

Stress concentration
The Effect of the Precipitation of Coherent and Incoherent Precipitates on the Ductility and Toughness of High-Strength Steel. 127-139A
Stress Distribution in Particulate-Reinforced Metal-Matrix Composites Subjected to External Load. 197-207A
Periodic Oxide Cracking on Fe2.25Cr1Mo Produced by High-Temperature Fatigue Tests With a Compression Hold. 327-333A

Stress corrosion cracking, Alloying effects
Environmentally Assisted Cracking of Two-Phase Iron—Manganese—Aluminum Alloys in NaCl Solution. 459-464A

Stress corrosion cracking, Environmental effects
Stress Corrosion Cracking of Ag—20Au in $HClO_4$, $AgClO_4$, and KCl Solutions by Surface Mobility. 425-433A
A Mechanism for Transgranular Stress-Corrosion Cracking. (Conference Paper) 553-559A
Hydrogen-Facilitated Corrosion and Stress Corrosion Cracking of Austenitic Stainless Steel of Type 310. 959-962A

Stress corrosion cracking, Stress effects
Stress-Corrosion Cracking in Equiaxed 7075 Aluminum Under Tension and Torsion Loading. 2569-2575A

Stress corrosion resistance
See Corrosion resistance

Stress cycle
Periodic Oxide Cracking on Fe2.25Cr1Mo Produced by High-Temperature Fatigue Tests With a Compression Hold. 327-333A
The Growth of Small Fatigue Cracks in A286 Steel. 689-700A
Computer Simulation of Martensitic Transformations in Constrained, Two-Dimensional Crystals Under External Stress. 1281-1294B
Environmental Interactions in High-Temperature Fatigue Crack Growth of Ti-1100. 1321-1332B
Fatigue Crack Growth Through the Lamellar Microstructure of an Alloy Based on TiAl at 25 and 800°C. 1555-1574A
Cyclic Deformation and Fracture Behavior of Aluminum Alloy 6061 Under the Action of Positive Mean Stresses. 2083-2093A

Stress distribution
See Stress concentration

Stress intensity
A Mechanism for Transgranular Stress-Corrosion Cracking. (Conference Paper) 553-559A
The Growth of Small Fatigue Cracks in A286 Steel. 689-700A
Failure Mechanisms in SiC-Fiber Reinforced 6061 Aluminum Alloy Composites Under Monotonic and Cyclic Loading. 721-734A
Internal Friction Due to Thermoelastic Martensitic Transformation. 1067-1071A
The Composition of the Solid Solution, Structure, and Contact Fatigue of the Case-Hardened Layer. 1163-1168A
Cooperative Grain-Boundary Sliding in Mechanically Alloyed IN 90211 Alloy During High Strain Rate Superplasticity. 1208-1212A
Failure Diagrams for Unidirectional Fiber Metal-Matrix Composites. 1531-1542A
Correction to "Failure Diagrams for Unidirectional Fiber Metal-Matrix Composites". 1531-1542A
Influence of Strain Rate on Interpass Softening During the Simulated Warm Rolling of Interstitial-Free Steels. 1543-1553A
Theoretical Calculation of Anisotropic Creep and Stress—Strain Behavior for a Class of Metal-Matrix Composites. 2049-2059A
Cyclic Deformation and Fracture Behavior of Aluminum Alloy 6061 Under the Action of Positive Mean Stresses. 2083-2093A

Residual Stress Measurements by X-Ray Diffraction in the Ferritic/Austenitic Interface Weldment. 2095-2106A
Microstructural Examination of Fatigue Crack Tip in High Strength Steel. 2209-2216A
A Theoretical Evaluation of Crack Closure. 2225-2232A
Scaling Laws for Fatigue Crack Growth of Large Cracks in Steels. 2473-2486A
Creep Regimes for Directionally Solidified Al—Al_3Ni Eutectic Composite. 2721-2730A

Stress relaxation
Early Stages of Decomposition in Iron—Carbon and Iron—Nitrogen Martensites: Diffraction Analysis Using Synchrotron Radiation. 1965-1973A
Transformation Path Dependence of the Bain Strain Relaxation During Decomposition of a Hypereutectoid CuBe Alloy. 2605-2611A

Stress relaxation, Coating effects
Direct Viscoelastic Strain Relaxation Measurements With Interference Microscopy: Analysis of Sheet Metal Polymer Coatings. 1678-1681A

Stress rupture strength
See Creep rupture strength

Stress strain curves
Boron and Off-Stoichiometry Effects on the Strength and Ductility of AlRu. 227-230A
The Influence of Martensite Shape, Concentration, and Phase Transformation Strain on the Deformation Behavior of Stable Dual-Phase Steels. 301-314A
Micromechanisms of Brittle Fracture. (Conference Paper) 523-534A
Mechanical and Oxidation Properties of AlRu-Based High-Temperature Alloys. 759-763A
An Assessment of Cold Work Effects on Strain-Controlled Low-Cycle Fatigue Behavior of Type 304 Stainless Steel. 913-924A
Simulated Hot Working, Cold Working, and Annealing of Aluminum-Containing Steels. 1589-1596A
Evolution of Damage and Plasticity in Titanium-Based, Fiber-Reinforced Composites. 1597-1610A
Effect of Melt Cleanliness on the Properties of an Al—10 wt.% Si—10 vol.% SiC(p) Composite. 1631-1645A
Layer Thickness Effect on Ductile Tensile Fracture of Ultrahigh Carbon Steel—Brass Laminates. 1647-1653A
Influence of Thermally Induced Plasticity on the Bauschinger Effect of SiC/Al Composites. 1879-1882A
Effect of Deformation Parameters on the No-Recrystallization Temperature in Niobium-Bearing Steels. 2151-2159A
Continuous Cooling Deformation Testing of Steels. 2657-2665A

Stresses
See Axial stress
Contact stresses
Residual stress
Stress intensity
Tensile stress
Thermal stresses

Stretching
Effect of Stretching on the Precipitation Kinetics of an Al—2.0Li—2.8Cu—0.5Mg(—0.13Zr) Alloy. 2613-2621A

Strip
See also Strip steel

Strip, Rolling
Densification and Deformation Behavior of a Porous Metal Strip During Hot Rolling. 1753-1760A

Strip casting
A Two-Dimensional Heat and Fluid-Flow Model of Single-Roll Continuous-Sheet Casting Process. 521-535B

Strip steel, Rolling
Physical Asymmetry of the Crystallographic Texture of an Interstitial-Free Sheet Steel. 2009-2019A

Stripping (distillation)
Characterization of Neodymium Oxalate Precipitated From 2-Ethylhexyl Phosphonic Acid Mono-2-Ethylhexyl Ester Solution. 537-538B

Strontium, Alloying elements
The Effect of Sodium and Strontium Modification on Surface Tension and Volumetric Shrinkage of A356 Alloy and Their Influence on Porosity Formation. 1055-1063B

Strontium, Diffusion
Determination of Diffusion Coefficients of Strontium in Liquid Aluminum. 707-709B

Strontium, Oxidation
Determination of Standard Gibbs Energies of Formation of MgO, SrO, and BaO. 487-492B

Structural hardening
See Dispersion hardening
Precipitation hardening
Strain hardening

Structural members
See Plates (structural members)

Structure (atomic)
See Atomic structure

Structures (crystalline)
See Crystal structure
Grain structure
Microstructure

Submerged arc welding
Fracture Toughness Analysis of Heat-Affected Zones in High-Strength Low-Alloy Steel Welds. 1133-1141A

Submerged arc welds
See Welded joints

Substructures (crystalline), Heating effects
The Effect of Wire History on the Coarsened Substructure and Secondary Recrystallization of Doped Tungsten. 843-851A

Suction
See Vacuum

Sulfates
See Sulfuric acid

Sulfur, Impurities
Effect of Sulfur Content on the Microstructure and Toughness of Simulated Heat-Affected Zone in Titanium-Killed Steels. 1399-1408B

Sulfuric acid, Environment
Hydrogen-Facilitated Corrosion and Stress Corrosion Cracking of Austenitic Stainless Steel of Type 310. 959-962A

Sulphur
See Sulfur

Superalloys, Casting
Three-Dimensional Probabilistic Simulation of Solidification Grain Structures: Application to Superalloy Precision Castings. 467-479A

Superalloys, Corrosion
Design and Development of Hot Corrosion-Resistant Nickel-Base Single Crystal Superalloys by the d-Electrons Alloy Design Theory. I. Characterization of the Phase Stability. 2443-2450A
Design and Development of Hot Corrosion-Resistant Nickel-Base Single-Crystal Superalloys by the d-Electrons Alloy Design Theory. II. Effects of Refractory Metals Titanium, Tantalum, and Niobium on Microstructures and Properties. 2451-2464A

Superalloys, Diffusion
An Analytical Model for Solute Redistribution During Solidification of Planar, Columnar, or Equiaxed Morphology. 2107-2118A

Superalloys, Forging
Computer Simulation of the Forging of Fine Grain IN-718 Alloy. 2061-2071A

Superalloys, Heat treatment
Nonuniform Recrystallization in a Mechanically Alloyed Nickel-Base Superalloy. 1049-1055A
The Dendritic Growth of γ' Precipitates and Grain Boundary Serration in a Model Nickel-Base Superalloy. 1733-1743A
Microstructure and Hydrogen Effects on Fracture in the Alloy A-286. 1983-1991A

Superalloys, Structural hardening
Precipitation Hardening in Nickel—Copper Base Alloy Monel K500. 2709-2719A

Superalloys, Welding
Microstructural Characterization of Incoloy 903 Weldments. 1169-1179A
The Effect of Weld Heat-Affected Zone (HAZ) Liquation Kinetis on the Hot Cracking Susceptibility of Alloy 718. 1409-1422B
Kinetics of Grain Growth in the Weld Heat-Affected Zone of Alloy 718. 2773-2785A

Superconducting magnets, Mechanical properties
The Growth of Small Fatigue Cracks in A286 Steel. 689-700A

Superconductors
See Superconducting magnets

Supercooling
Optical Properties and Spectral Emissivities at 623.8 nm in the Titanium—Aluminum System. 67-72A
The Glass—Liquid and Solid—Jelly Transition Temperatures. 309-315B
A Stereological Formulation for the Source Team in Micromodels of Equiaxed Eutectic Solidification. 539-542B
Heterogeneous Nucleation of Solidification of Silicon by Solid Aluminum in Hypoeutectic Al—Si Alloy. 1195-1204A
Phase Selection in Undercooled Ti_3Sn Melts. 1481-1496A
A Model for the Graphite Formation in Ductile Cast Iron. I. Inoculation Mechanisms. 2321-2345A
A Multiphase Solute Diffusion Model for Dendritic Alloy Solidification. 2787-2802A

Superheating
The Glass—Liquid and Solid—Jelly Transition Temperatures. 309-315B
Accretion Growth on Single-Pipe Tuyeres. I. Model Development and Preliminary Analysis. 571-582B
Accretion Growth on Single-Pipe Tuyeres. II. Model Results and Discussion. 583-591B

Superplastic forming
An Investigation of Superplasticity in a Thermomechanically Processed U—2Mo (α + δ) Alloy. 369-377A
An Investigation of Superplasticity in a Thermomechanically Processed U—6Nb (α + γ_2) Alloy. 379-388A
Cavity Distribution Pattern in a Superplastically Deformed Aluminum Alloy. 417-424A
The Absence of Relative Grain Translation During Superplastic Deformation of an Al—Li—Mg—Cu—Zr Alloy. 1085-1093A

Superplasticity
Grain Growth of a Superplastic 7475 Aluminum Alloy. 493-495A

Superplasticity, Deformation effects
An Investigation of Superplasticity in a Thermomechanically Processed U—2Mo (α + δ) Alloy. 369-377A

Superplasticity, Heating effects
A Study of the Improvement of Superplasticity of 7075 Alloy. 2596-2598A

Superplasticity, Microstructural effects
An Investigation of Superplasticity in a Thermomechanically Processed U—6Nb (α + γ_2) Alloy. 379-388A

Superplasticity, Stress effects
Cooperative Grain-Boundary Sliding in Mechanically Alloyed IN 90211 Alloy During High Strain Rate Superplasticity. 1208-1212A

Supersonic planes
See Hypersonic planes

Surface chemistry
A Mössbauer Study of the Behavior of Iron Cations in Iron Oxide-Containing Melts at 1400°C. 101-111B
Hydrogen Diffusion and Its Relevance to Intergranular Cracking in Nickel. 105-112A
Electrochemical Deoxidation of Titanium. 449-455B
Application of a Nonisothermal Thermogravimetric Method to the Kinetic Study of the Reduction of Metallic Oxides. II. A Theoretical Treatment of Powder Bed Reduction and Its Application to the Reduction of Tungsten Oxide by Hydrogen. 475-480B
Leaching of Cu_2O With Aqueous Solution of Sulfur Dioxide. 563-570B
Experimental Investigations of Dissolution Rates of Carbonaceous Materials in Liquid Iron—Carbon Melts. 629-638B
Surface and Interfacial Tension of the Ni—Fe—S, Ni—Cu—S, and Fayalite Slag Systems. 657-668B
Electrochemistry of *Thiobacillus ferrooxidans* Interactions With Pyrite. 717-727B
The Oxidation of Ilmenite and Its Relationship to the FeO—Fe_2O_3—TiO_2 Phase Diagram at 1073 and 1140K. 1257-1264B

Surface chemistry, Alloying effects
Design and Development of Hot Corrosion-Resistant Nickel-Base Single-Crystal Superalloys by the d-Electrons Alloy Design Theory. II. Effects of Refractory Metals Titanium, Tantalum, and Niobium on Microstructures and Properties. 2451-2464A

Surface chemistry, Cooling effects
Service Failure of Hot-Stage Turbine Blades: the Role and Mechanisms of Oxidation Ratcheting. 2313-2319A

Surface chemistry, Diffusion effects
The Detection of Solutal Convection During Electrochemical Measurement of the Oxygen Diffusivity in Liquid Tin. 91-100B

Surface chemistry, Environmental effects
Environmental Fatigue of an Al—Li—Cu Alloy. II. Microscopic Hydrogen Cracking Processes. 2751-2762A

Surface chemistry, High temperature effects
Compositional Changes in Aluminum—Lithium-Base Alloys Caused by Oxidation. 2279-2288A

Surface diffusion
See Diffusion

Surface energy
On the Anchoring of Solids at Curved Fluid Interfaces. 1673-1677A
Correction to "On the Anchoring of Solids at Curved Fluid Interfaces". 1673-1677A

Surface finishing
See Surface pretreatments

Surface hardening
See also Laser beam hardening
Surface Hardening of Ti—6Al—4V Alloy by Electrochemical Hydrogenation. 1181-1185A

Surface hardness, Heating effects
Solidification and Solid-State Transformation Mechanisms in Silicon Alloyed High-Chromium White Cast Irons. 981-988A
Surface Hardening of Ti—6Al—4V Alloy by Electrochemical Hydrogenation. 1181-1185A

Surface pretreatments
Surface Preparation and Bend Ductility of NiAl. 2593-2596A

Surface properties
See Roughness
Smoothness
Surface structure
Surface temperature
Surface tension
Tribology
Wetting

Surface roughness
See Roughness

Surface structure
Synthesis of Surface Pores in a Bronze—Graphite Composite Using Electron Beam Surface Melting. 230-233A
Experimental Investigations of Dissolution Rates of Carbonaceous Materials in Liquid Iron—Carbon Melts. 629-638B
The Oxidation of Ilmenite and Its Relationship to the FeO—Fe_2O_3—TiO_2 Phase Diagram at 1073 and 1140K. 1257-1264B
Effect of Melt Cleanliness on the Properties of an Al—10 wt.% Si—10 vol.% SiC(p) Composite. 1631-1645A
Spontaneous Evolution of Microstructure in Materials. 1689-1721A
Matrix Penetration of W/W Grain Boundaries and Its Effect on Mechanical Properties of 93W—5.6Ni—1.4Fe Heavy Alloy. 2411-2416A
Effects of Processing on the Transverse Fatigue Properties of Low-Sulfur AISI 4140 Steel. 2701-2708A

Surface structure, Alloying effects
High Nitrogen Concentration in Fe—Cr—Ni Alloys. 73-82A

Surface structure, Cooling effects
The Roles of Rare Earth Dispersoids and Process Route on the Low Cycle Fatigue Behavior of a Rapidly Solidified Powder Metallurgy Titanium Alloy. 1761-1771A

Surface structure, Deformation effects
An Analysis of Deformation, Temperature, and Microstructure for Hot-Extruded Titanium Alloy. 139-144B

Surface structure, Field effects
Thermosolutal Convection and Macrosegregation Caused by Solute Rejection at Cell/Dendrite Tips. 1661-1669A

Surface structure, Heating effects
Excimer Laser Surface Processing of Ti—6Al—4V. 215-224A

Surface structure, High temperature effects
Reaction Layer Formation at the Graphite/Copper—Chromium Alloy Interface. (Conference Paper) 53-60A
Mechanical and Oxidation Properties of AlRu-Based High-Temperature Alloys. 759-763A
Strain-Rate Effects on High-Temperature Fracture Behavior of a 2124Al—SiC_w Composite. 1125-1131A

Surface structure, Size effects
Determination of the Total Texture Function From Individual Orientation Measurements by Electron Backscattering Pattern. 2299-2311A

Surface structure, Stress effects
Periodic Oxide Cracking on Fe2.25Cr1Mo Produced by High-Temperature Fatigue Tests With a Compression Hold. 327-333A
Cooperative Grain-Boundary Sliding in Mechanically Alloyed IN 90211 Alloy During High Strain Rate Superplasticity. 1208-1212A
Small Fatigue Crack Behavior in 7075-T651 Aluminum as Monitored With Rayleigh Wave Reflection. 1773-1783A

Surface structure, Welding effects
Microstructural Modifications in an Explosively Welded Ti/Ti Clad Material. I. Bonding Interface. 735-742A
Microstructural Modifications in an Explosively Welded Ti/Ti Clad Material. II. Deformation Structures Around Bonding Interface. 743-750A
The Effects of Process Variables on Pulsed Nd:YAG Laser Spot Welds. I. AISI 409 Stainless Steel. 1065-1076B
New Explosive Welding Technique to Weld Aluminum Alloy and Stainless Steel Plates Using a Stainless Steel Intermediate Plate. 2289-2297A

Surface temperature
Solidification of Pure Metal in Imperfect Contact With a Mold. 542-544B
Real-Time Simulation of Heat Transfer in Continuous Casting. 685-693B
Fundamental Phenomena Governing Heat Transfer During Rolling. 1307-1320B

Surface tension
How Fast Can We Go? The Status of our Knowledge of the Rates of Gas—Liquid Metal Reactions. 241-258B
Experimental Investigation of the Phenomenon of Centrifuging of Liquids. 463-473B
Surface and Interfacial Tension of the Ni—Fe—S, Ni—Cu—S, and Fayalite Slag Systems. 657-668B

Surface tension, Alloying effects
The Measurement of the Surface Tension of Molten Fe—3.52% C—2.02% Si(—Al,—Ti,—N) Alloys by the Maximum Bubble Pressure Method. 200-203B
The Effect of Sodium and Strontium Modification on Surface Tension and Volumetric Shrinkage of A356 Alloy and Their Influence on Porosity Formation. 1055-1063B

Surface tension, Welding effects
Keyhole Formation. 875-880B

Surface waves
Small Fatigue Crack Behavior in 7075-T651 Aluminum as Monitored With Rayleigh Wave Reflection. 1773-1783A

Surgical implants, Mechanical properties
On the Nature and Crystallographic Orientation of Subsurface Cracks in High Cycle Fatigue of Ti—6Al—4V. 669-680A

Synchrotrons
Early Stages of Decomposition in Iron—Carbon and Iron—Nitrogen Martensites: Diffraction Analysis Using Synchrotron Radiation. 1965-1973A

Synthesis
An Investigation of the Effect of Porosity and Diluents on Micropyretic Synthesis. 617-628A
Standard Enthalpies of Formation of NbB_2, MoB, and ReB_2 by High-Temperature Direct Synthesis Calorimetry. 947-950A

Systems (metallurgical)
See Binary systems
Quaternary systems
Ternary systems

Tanks (electrolytic)
See Electrolytic cells

Tantalum, Alloying elements
The Effect of Annealing on the Microstructure and Mechanical Properties of Cu—X Microcomposites. (Conference Paper) 27-34A
Design and Development of Hot Corrosion-Resistant Nickel-Base Single-Crystal Superalloys by the d-Electrons Alloy Design Theory. II. Effects of Refractory Metals Titanium, Tantalum, and Niobium on Microstructures and Properties. 2451-2464A

Tapes
See Tapes (metallic)

Tapes (metallic), Mechanical properties
The Microstructural Evolution, Crystallography, and Thermal Processing of Ultrahigh Carbon Fe—1.85% C Melt-Spun Ribbon. 809-818A

Tapping (pouring)
Motions of Alloying Additions During Furnace Tapping in Steelmaking Processing Operations. 639-648B

Television
Orientation Imaging: the Emergence of a New Microscopy. 819-831A

Tellurium, Alloying elements
Metal-Induced Embrittlement of Low-Carbon Steel by Indium in Association With Tellurium. 504-508A

Temperature
See Dew point
Glass transition temperature
Surface temperature
Temperature gradient

Temperature gradient
Correction to "Planar to Equiaxed Transition in the Presence of an External Wetting Surface". 3361-3368A

Tempering
See also Quenching and tempering
The Effect of the Precipitation of Coherent and Incoherent Precipitates on the Ductility and Toughness of High-Strength Steel. 127-139A
Influence of Long-Term Aging and Superimposed Creep Stress on the Microstructure of 2.25Cr—1Mo Steel. 315-326A
Mechanical Behavior of Double-Aged AA8090. 833-841A
The Mechanical Stability of Austenite and Cryogenic Toughness of Ferritic Fe—Mn—Al Alloys. 1333-1343B
Early Stages of Decomposition in Iron—Carbon and Iron—Nitrogen Martensites: Diffraction Analysis Using Synchrotron Radiation. 1965-1973A

Tenacity
See Tensile strength

Tensile modulus
See Modulus of elasticity

Tensile properties
See also Elongation
Necking
Tensile strength
Yield strength

Tensile properties, Corrosion effects
Effects of Hydrogen on Mechanical Properties and Fracture Mechanism of 8090 Al—Li alloy. 1355-1361B

Tensile shear strength
See Shear strength

Tensile strength, Alloying effects
Microstructure and Mechanical Behavior of Al—Li—Cu—Mg Alloy 8090 Microalloyed With Vanadium and Beryllium. 95-104A

Tensile strength, Composition effects
Hydrogen Tolerance of a Ti_3Al-Based Alloy. 1095-1106A

Tensile strength, Deformation effects
Strength and Electrical Conductivity of a Deformation-Processed Cu—5 vol.% Nb Composite. (Conference Paper) 7-14A
Strength and Electrical Conductivity of Deformation-Processed Cu—15 Vol% Fe Alloys Produced by Powder Metallurgy Techniques. (Conference Paper) 35-42A
Particulate Fracture During Deformation of a Spray Formed Metal-Matrix Composite. 1575-1588A
General Aspects of the Thermomechanical Treatment of Two-Phase Intermetallic TiAl Compounds. 1795-1806A

Tensile strength, Heating effects
The Effect of Annealing on the Microstructure and Mechanical Properties of Cu—X Microcomposites. (Conference Paper) 27-34A
The Microstructural Evolution, Crystallography, and Thermal Processing of Ultrahigh Carbon Fe—1.85% C Melt-Spun Ribbon. 809-818A
Mechanical Behavior of Double-Aged AA8090. 833-841A

Tensile strength, High temperature effects
Mechanical and Oxidation Properties of AlRu-Based High-Temperature Alloys. 759-763A
Strain-Rate Effects on High-Temperature Fracture Behavior of a 2124Al—SiC_w Composite. 1125-1131A
The Effects of Prolonged Thermal Exposure on the Fracture and Fatigue Behavior of Aluminum—Lithium Alloy 8090. 2233-2245A

Tensile strength, Microstructural effects
High-Strength High-Conductivity Cu—Nb Microcomposite Sheet Fabricated via Multiple Roll Bonding. (Conference Paper) 15-20A
Deformation-Processed Wire Prepared From Gas-Atomized Cu—Nb Alloy Powders. (Conference Paper) 21-26A
Microstructure and Mechanical Properties of Dispersion-Strengthened High-Temperature Al—8.5Fe—1.2V—1.7Si Alloys Produced by Atomized Melt Dispersion Process. 865-873A
Matrix Penetration of W/W Grain Boundaries and Its Effect on Mechanical Properties of 93W—5.6Ni—1.4Fe Heavy Alloy. 2411-2416A

Tensile strength, Stress effects
Preliminary Evaluation of Tensile and Stress—Rupture Behavior of Tungsten + 24 at.% Rhenium + 0.4 at.% HfC Wire. 209-214A

Tensile strength, Temperature effects
Temperature Dependence of Strain Hardening in a Dispersion-Strengthened Al—Fe—V—Si Alloy. 2589-2593A

Tensile strength, Welding effects
Fracture Toughness Analysis of Heat-Affected Zones in High-Strength Low-Alloy Steel Welds. 1133-1141A
New Explosive Welding Technique to Weld Aluminum Alloy and Stainless Steel Plates Using a Stainless Steel Intermediate Plate. 2289-2297A

Tensile stress
Rate and Environmental Effects on Fracture of a Two-Phase TiAl-Alloy. 113-125A
Deformation-Induced Residual Stress Changes in SiC Whisker-Reinforced 6061 Aluminum Composites. 187-196A
Ductile Fracture of Mechanically Alloyed Iron—Yttria Alloys. 681-687A
Martensitic-Transformation Sequence in a $Ti_{50}Ni_{47}Pd_3$ Alloy. 1205-1208A
Residual Stress Measurements by X-Ray Diffraction in the Ferritic/Austenitic Interface Weldment. 2095-2106A
Residual Stresses and Their Effects on Deformation in Particle-Reinforced Metal-Matrix Composites. 2487-2496A
The Effects of Combined Strain-Path and Strain-Rate Changes in Aluminum. 2679-2689A

Tensile tests
See Tension tests

Tensile yield strength
See Yield strength

Tension
Stress-Corrosion Cracking in Equiaxed 7075 Aluminum Under Tension and Torsion Loading. 2569-2575A

Tension impact tests
See Impact tests

Tension tests
Strain-Rate Effects on High-Temperature Fracture Behavior of a 2124Al—SiC_w Composite. 1125-1131A
Evolution of Damage and Plasticity in Titanium-Based, Fiber-Reinforced Composites. 1597-1610A
Auger Electron Spectroscopy Study of Grain Boundary Segregation in Alloy K-500. II. Behavior in Slow Strain Rate Tensile Test. 1909-1917A
Numerical Analysis of the Hot Tension Test. 2039-2047A
Effects of Heat Treatment and Reinforcement Size on Reinforcement Fracture During Tension Testing of a SiC_p Discontinuously Reinforced Aluminum Alloy. 2531-2543A
Strain Path Change Effects in the Local Necking of Aluminum Sheet and in the Tension of Internally Pressurized Tubes. 2691-2699A

Ternary systems, Phases (state of matter)
A Thermodynamic Evaluation of the Fe—Mn—N System. 629-645A
Thermodynamics of Si—C—O System. 1212-1214A
Phase Relations in the System Cu—Gd—O and Gibbs Energy of Formation of $CuGd_2O_4$. 1655-1660A
Thermochemistry of Binary and Ternary Noble Metal Alloys: the Systems Cu—Ce, Ag—Ce, Au—Ce, Cu—Ag—Au, and Ce—Ag—Au. 1827-1834A
A Thermodynamic Evaluation of the Cr—Mn and Fe—Cr—Mn Systems. 1919-1933A

Texture
How Are New Orientations Generated During Primary Recrystallization?en 225-239B
X-Ray Elastic Constants in Textured Zirconium-Base Materials. 389-396A
On the Nature and Crystallographic Orientation of Subsurface Cracks in High Cycle Fatigue of Ti—6Al—4V. 669-680A
How Are New Orientations Generated During Primary Recrystallization?en 1001-1015A

Texture, Deformation effects
The Role of Microstructure on Strength and Ductility of Hot-Extruded Mechanically Alloyed NiAl. 1993-2000A
Physical Asymmetry of the Crystallographic Texture of an Interstitial-Free Sheet Steel. 2009-2019A
Microstructural Evolution in Nickel During Rolling From Intermediate to Large Strains. 2021-2037A

Texture, Heating effects
The Effect of Annealing on the Microstructure and Mechanical Properties of Cu—X Microcomposites. (Conference Paper) 27-34A
Crystallographic Texture in Mechanically Alloyed Oxide Dispersion-Strengthened MA956 and MA957 Steels. 773-779A

Texture, Size effects
Determination of the Total Texture Function From Individual Orientation Measurements by Electron Backscattering Pattern. 2299-2311A

Thawing
See Melting

Thermal analysis
See Differential thermal analysis
Thermogravimetric analysis

Thermal capacity
See Specific heat

Thermal conductivity
Reaction Layer Formation at the Graphite/Copper—Chromium Alloy Interface. (Conference Paper) 53-60A
Entrance Effects on Low Prandtl Number Convection Through a Circular Duct. 197-200B
Synthesis of Surface Pores in a Bronze—Graphite Composite Using Electron Beam Surface Melting. 230-233A
A Stereological Formulation for the Source Team in Micromodels of Equiaxed Eutectic Solidification. 539-542B
Numerical Simulation of the Infiltration of Fibrous Preforms by a Pure Metal. 2667-2678A

Thermal conductivity, Alloying effects
A Model for the Thermal Properties of Liquid-Phase Sintered Composites. 1745-1752A

Thermal conductivity, Orientation effects
Thermal Conductivity and Thermal Expansion of Graphite Fiber-Reinforced Copper Matrix Composites. (Conference Paper) 43-52A

Thermal diffusivity
Solidification of Pure Metal in Imperfect Contact With a Mold. 542-544B
Simulation of Metal Solidification Using a Cellular Automaton. 1045-1053B

Thermal expansion, Alloying effects
A Model for the Thermal Properties of Liquid-Phase Sintered Composites. 1745-1752A

Thermal expansion, Orientation effects
Thermal Conductivity and Thermal Expansion of Graphite Fiber-Reinforced Copper Matrix Composites. (Conference Paper) 43-52A

Thermal expansion, Stress effects
Residual Stresses and Their Effects on Deformation in Particle-Reinforced Metal-Matrix Composites. 2487-2496A

Thermal fatigue, High temperature effects
The Effects of Prolonged Thermal Exposure on the Fracture and Fatigue Behavior of Aluminum—Lithium Alloy 8090. 2233-2245A

Thermal flux
See Heat transmission

Thermal properties
See Boiling points
Lorenz number
Melting points
Specific heat
Thermal conductivity
Thermal diffusivity
Thermal expansion
Thermal stability
Vapor pressure

Thermal reduction
See Fluidized bed reduction
Smelting

Thermal resistivity
See Thermal conductivity

Thermal stability
Preliminary Evaluation of Tensile and Stress—Rupture Behavior of Tungsten + 24 at.% Rhenium + 0.4 at.% HfC Wire. 209-214A
Strength and Toughness of a Nb/Nb_5Si_3 Composite. 501-504A

Thermal stresses
Deformation-Induced Residual Stress Changes in SiC Whisker-Reinforced 6061 Aluminum Composites. 187-196A
Preliminary Evaluation of Tensile and Stress—Rupture Behavior of Tungsten + 24 at.% Rhenium + 0.4 at.% HfC Wire. 209-214A
The Influence of Martensite Shape, Concentration, and Phase Transformation Strain on the Deformation Behavior of Stable Dual-Phase Steels. 301-314A
Computer Simulation of Martensitic Transformations in Constrained. Two-Dimensional Crystals Under External Stress. 1281-1294B
Environmental Interactions in High-Temperature Fatigue Crack Growth of Ti-1100. 1321-1332B
Diffusion Bonding of Silicon Nitride to Austenitic Stainless Steel Without Interlayers. 1835-1843A
Influence of Thermally Induced Plasticity on the Bauschinger Effect of SiC/Al Composites. 1879-1882A
Damping Characteristics of TiNi Shape Memory Alloys. 2189-2194A
Elastic Limit and Microplastic Response of Hardened Steels. 2263-2277A

Thermochemistry
Phase Chemistry and Precipitation Reactions in Maraging Steels. III. Model Alloys. 1241-1249B

Thermodynamics
See also Enthalpy
Entropy
Free energy
The Solubility of Copper in Lime-Saturated and Calcium Ferrite-Saturated Liquid Iron Oxide. 265-269B
Critical Evaluation and Optimization of the Thermodynamic Properties and Phase Diagrams of the MnO—TiO_2, MgO—TiO_2, FeO—TiO_2, Ti_2O_3—TiO_2, Na_2O—TiO_2, and K_2O—TiO_2 Systems. 795-805B
Critical Evaluation and Optimization of the Thermodynamic Properties and Phase Diagrams of the CaO—Al_2O_3, Al_2O_3—SiO_2, CaO—Al_2O_3—SiO_2 Systems. 807-816B
Oxygen Deleading of Lead—Bismuth Alloys. 839-846B
Thermodynamic Activity of Antimony at Dilute Solutions in Carbon-Saturated Liquid Iron. 963-973B
Thermodynamic Study of the NiO—MgO System in the Temperature Range 1073-1473K by a Galvanic Cell Technique. 1023-1030B
A Thermodynamic Evaluation of the Cr—Mn and Fe—Cr—Mn Systems. 1919-1933A
An Experimental Study and Thermodynamic Evaluation of the Fe—Mo—Ti System at 1000°C. 2137-2144A
Thermodynamic Analysis and Evaluation of the Fe—Cr—Mn—N System. 2393-2409A

Thermoelastic properties
See also Shape memory

Thermoelastic properties, Microstructural effects
Characterization of Room-Temperature Damping in Aluminum—Indium Alloys. 1611-1619A

Thermogravimetric analysis
Application of a Nonisothermal Thermogravimetric Method to the Kinetic Study of the Reduction of Metallic Oxides. II. A Theoretical Treatment of Powder Bed Reduction and Its Application to the Reduction of Tungsten Oxide by Hydrogen. 475-480B

Thermomechanical properties
See Thermoelastic properties

Thermomechanical treatment
An Investigation of Superplasticity in a Thermomechanically Processed U—2Mo (α + δ) Alloy. 369-377A
An Investigation of Superplasticity in a Thermomechanically Processed U—6Nb (α + γ_2) Alloy. 379-388A
General Aspects of the Thermomechanical Treatment of Two-Phase Intermetallic TiAl Compounds. 1795-1806A
Auger Electron Spectroscopy Study of Grain Boundary Segregation in Alloy K-500. II. Behavior in Slow Strain Rate Tensile Test. 1909-1917A
A Study of the Improvement of Superplasticity of 7075 Alloy. 2596-2598A
Continuous Cooling Deformation Testing of Steels. 2657-2665A

Thermostability
See Thermal stability

Thickness
Determination of the Total Texture Function From Individual Orientation Measurements by Electron Backscattering Pattern. 2299-2311A

Tig arc welding
See Gas tungsten arc welding

TIG welding
See Gas tungsten arc welding

Tin, Casting
Experimental Investigation of the Phenomenon of Centrifuging of Liquids. 463-473B

Tin, Diffusion
The Detection of Solutal Convection During Electrochemical Measurement of the Oxygen Diffusivity in Liquid Tin. 91-100B

Tin, Refining
Activities in Cu_2S—FeS—SnS Melts at 1200°C. 301-308B

Tin base alloys, Metal working
Shear Rate Thickening Flow Behavior of Semisolid Slurries. 1107-1116A

Tin base alloys, Phases (state of matter)
Sn—C and Al—Sn—C Phase Diagrams and Thermodynamic Properties of Carbon in the Alloys: 1550-2300°C. 53-58B

Tin base alloys, Powder technology
Spray Deposition of a Sn—40 wt.% Pb Alloy With Uniform Droplets. 1187-1193A

Tin compounds, Impurities
Determination of Standard Gibbs Energy of Formation of Ca_3N_2. 907-909B

Tin compounds, Phases (state of matter)
Phase Selection in Undercooled Ti_3Sn Melts. 1481-1496A

Tin compounds, Powder technology
Selective Laser Sintering of Intermetallics. 757-759A

Titanium, Alloying elements
The Measurement of the Surface Tension of Molten Fe—3.52% C—2.02% Si(—Al,—Ti,—N) Alloys by the Maximum Bubble Pressure Method. 200-203B
Phase Chemistry and Precipitation Reactions in Maraging Steels. IV. Discussion and Conclusions. 1251-1256B
The Effect of Trace-Titanium Content on the Solubility of Niobium and the Consequent Properties of Niobium-Bearing Steels. 2127-2130A
Design and Development of Hot Corrosion-Resistant Nickel-Base Single-Crystal Superalloys by the d-Electrons Alloy Design Theory. II. Effects of Refractory Metals Titanium, Tantalum, and Niobium on Microstructures and Properties. 2451-2464A

Titanium, Binary systems
Liquidus Temperatures in the Ti—Al System. 61-66A
Optical Properties and Spectral Emissivities at 623.8 nm in the Titanium—Aluminum System. 67-72A

Titanium, Chemical analysis
The Oxidation of Ilmenite and Its Relationship to the FeO—Fe_2O_3—TiO_2 Phase Diagram at 1073 and 1140K. 1257-1264B

Titanium, Electrochemistry
Electrochemical Deoxidation of Titanium. 449-455B

Titanium, Mechanical properties
Microstructural Features of Flow Instability in α-Titanium Cylinders Under High Strain Rate Compression at 25-400°C. 2513-2520A

Titanium, Reactions (chemical)
A Real-Time Gravimetric Instrument for Combustion Studies of Metallic Materials. 395-397B

Titanium, Ternary systems
An Experimental Study and Thermodynamic Evaluation of the Fe—Mo—Ti System at 1000°C. 2137-2144A

Titanium, Welding
Microstructural Modifications in an Explosively Welded Ti/Ti Clad Material. I. Bonding Interface. 735-742A
Microstructural Modifications in an Explosively Welded Ti/Ti Clad Material. II. Deformation Structures Around Bonding Interface. 743-750A

Titanium base alloys, Composite materials
Strength, Fracture, and Fatigue Behavior of Advanced High-Temperature Intermetallics Reinforced With Ductile Phases. (Conference Paper) 585-600A
Residual Strain Gradient Determination in Metal Matrix Composites by Synchrotron X-Ray Energy Dispersive Diffraction. 1117-1124A
Failure Diagrams for Unidirectional Fiber Metal-Matrix Composites. 1531-1542A
Correction to "Failure Diagrams for Unidirectional Fiber Metal-Matrix Composites". 1531-1542A
Evolution of Damage and Plasticity in Titanium-Based, Fiber-Reinforced Composites. 1597-1610A

Titanium base alloys, Extrusion
An Analysis of Deformation, Temperature, and Microstructure for Hot-Extruded Titanium Alloy. 139-144B

Titanium base alloys, Heat treatment
Excimer Laser Surface Processing of Ti—6Al—4V. 215-224A

Age-Hardening Behavior of Titanium Alloy Ti—6Al—5Zr—0.5Mo—0.25Si. 763-766A
Surface Hardening of Ti—6Al—4V Alloy by Electrochemical Hydrogenation. 1181-1185A
Microstructural Characterisation of Near-α Titanium Alloy Ti—6Al—4Sn—4Zr—0.70Nb—0.50Mo—0.40Si. 1273-1280B

Titanium base alloys, Mechanical properties
Rate and Environmental Effects on Fracture of a Two-Phase TiAl-Alloy. 113-125A
Effect of Ti/Al Ratio and Chromium, Niobium, and Hafnium Additions on Material Factors and Mechanical Properties in TiAl. 141-150A
Toughening Mechanisms in Titanium Aluminides. (Conference Paper) 569-583A
On the Nature and Crystallographic Orientation of Subsurface Cracks in High Cycle Fatigue of Ti—6Al—4V. 669-680A
Hydrogen Tolerance of a Ti_3Al-Based Alloy. 1095-1106A
Environmental Interactions in High-Temperature Fatigue Crack Growth of Ti-1100. 1321-1332B
Fatigue Crack Growth Through the Lamellar Microstructure of an Alloy Based on TiAl at 25 and 800°C. 1555-1574A
Morphological Effect on the Mechanical Behavior of a Two-Phase Ti_3Al—Nb Alloy. 1785-1793A
The Effect of Nickel, Chromium, and Primary Alpha Phase on the Creep Behavior of Ti—6242Si. 1819-1826A

Titanium base alloys, Metal working
General Aspects of the Thermomechanical Treatment of Two-Phase Intermetallic TiAl Compounds. 1795-1806A

Titanium base alloys, Phase transformations
Martensitic-Transformation Sequence in a $Ti_{50}Ni_{47}Pd_3$ Alloy. 1205-1208A

Titanium base alloys, Phases (state of matter)
Calorimetrically Measured Enthalpies for the Reaction of $H_2(D_2)$ (g) With Titanium and Ti—Ni Alloys at 323K. 867-873B

Titanium base alloys, Powder technology
The Role of Inclusion and Pore Content on the Fracture Toughness of Powder-Processed Blended Elemental Titanium Alloys. 161-174A
Combustion Reaction of $Ni_{40}Ti_{60}$ During Mechanical Alloying in Oxygen Atmosphere. 225-227A
Reaction Sintering of Cold-Extruded Elemental Powder Mixture Ti—48Al. 1517-1526A
The Roles of Rare Earth Dispersoids and Process Route on the Low Cycle Fatigue Behavior of a Rapidly Solidified Powder Metallurgy Titanium Alloy. 1761-1771A

Titanium base alloys, Reactions (chemical)
Deoxidation of Molten Titanium by Electron-Beam Remelting Technique. 599-604B

Titanium base alloys, Rolling
Determination of Heat of Transformation in a Cold-Rolled Martensitic TiNi Alloy. 293-299A

Titanium base alloys, Welding
Effect of Activity Differences on Hydrogen Migration in Dissimilar Titanium Alloy Welds. 2763-2771A

Titanium carbide, Composite materials
Synthesis of TiC Particulates and Their Segregation During Solidification in In Situ Processed Al—TiC Composites. 2358-2362A
The Influence of Matrix Microstructure and TiC Reinforcement on the Cyclic Response and Fatigue Behavior of 2219 Aluminum. 2545-2557A
Mechanism of TiC Formation in Al/TiC In Situ Metal-Matrix Composites. 2803-2805A

Titanium compounds
See also Titanium carbide

Titanium compounds, Composite materials
Strength, Fracture, and Fatigue Behavior of Advanced High-Temperature Intermetallics Reinforced With Ductile Phases. (Conference Paper) 585-600A
Microstructural Toughening Mechanisms in γ-TiAl · 20% TiCb as Determined by FRASTA. 883-894A

Titanium compounds, Crystal growth
Kinetics of Growth of the Ti—Co Intermetallic Compounds During Rapid Solidification. 1869-1875A

Titanium compounds, Mechanical properties
Microhardness and Compressive Mechanical Behavior of $L1_2$ Titanium Trialuminides. 935-946A

Titanium compounds, Phases (state of matter)
Phase Selection in Undercooled Ti_3Sn Melts. 1481-1496A

Tool steels
See High speed tool steels

Torsion
Dislocation Structure Evolution in Torsion of Pure Copper. 361-367A

Torsional modulus
See Shear modulus

Torsional strength
See Shear strength

Torsional vibration
See Torsion

Total heat
See Enthalpy

Toughness
See also Fracture toughness

Toughness, Alloying effects
Boron and Off-Stoichiometry Effects on the Strength and Ductility of AlRu. 227-230A

Toughness, Cooling effects
Improved Model to Predict Properties of Aluminum Alloy Products After Continuous Cooling. 2417-2427A

Toughness, Environmental effects
Effects of Hydrogen on the Mixed Mode I/III Toughness of a High-Purity Rotor Steel. 1450-1451B

Toughness, Heating effects
The Mechanical Stability of Austenite and Cryogenic Toughness of Ferritic Fe—Mn—Al Alloys. 1333-1343B
Microstructural Changes in As-Cast M2 Grade High Speed Steel During Hot Forging. 2171-2180A

Toughness, High temperature effects
Mechanical and Oxidation Properties of AlRu-Based High-Temperature Alloys. 759-763A

Toughness, Impurity effects
Effect of Sulfur Content on the Microstructure and Toughness of Simulated Heat-Affected Zone in Titanium-Killed Steels. 1399-1408B

Transformation entropy
See Entropy

Transformations (materials)
See Phase transformations

Transgranular corrosion, Environmental effects
A Mechanism for Transgranular Stress-Corrosion Cracking. (Conference Paper) 553-559A

Transgranular fracture
A Transgranular Fatigue Crack Growth Model Based on Restricted Slip Reversibility. 1373-1380B

Transition metal alloys
See Copper base alloys
Ferrous alloys
Nickel base alloys
Titanium base alloys
Zinc base alloys
Zirconium base alloys

Transition metal compounds
See Cobalt compounds
Iron compounds
Nickel compounds
Titanium compounds
Yttrium compounds

Transition metals
See Cobalt
Copper
Hafnium
Iron
Manganese
Nickel
Scandium
Titanium
Zinc

Transmission
See Heat transmission

Transmission electron microscopy
Phase Chemistry and Precipitation Reactions in Maraging Steels. I. Introduction and Study of Cobalt-Containing C-300 Steel. 1221-1239B
Microstructural Characterization and *In Situ* Transmission Electron Microscopy Analysis of Laser-Processed and Thermally Treated Fe—Cr—W—C Clad Coatings. 1621-1629A
Transmission Electron Microscopy Examination of Hardening and Toughening Phenomena in Aermet 100. 1943-1955A

Transport properties
See also Ionic mobility
General Model of a Gas Transport Through Solid Porous Membranes. 1527-1530A

Triaxial stress
See Axial stress

Tribology, Composition effects
Tribological Characteristics of Aluminum—50 Vol.% Graphite Composite. 151-159A

TRIP steels, Metal working
Continuous Cooling Deformation Testing of Steels. 2657-2665A

Tubular goods
See Pipe

Tundishes
Inclusion Behavior and Heat-Transfer Phenomena in Steelmaking Tundish Operations. I. Aqueous Modeling. 755-765B
Inclusion Behavior and Heat-Transfer Phenomena in Steelmaking Tundish Operations. II. Mathematical Model for Liquid Steel in Tundishes. 767-777B
Inclusion Behavior and Heat-Transfer Phenomena in Steelmaking Tundish Operations. III. Applications—Computational Approach to Tundish Design. 779-788B

Tungsten, Alloying elements
As-Cast Carbides in High-Speed Steels. 1265-1272B

Tungsten, Binary systems
Metastable Crystalline and Amorphous Structures Formed in the Cu—W System by Vapor Deposition. 1027-1037A

Tungsten, Crystal growth
The Effect of Wire History on the Coarsened Substructure and Secondary Recrystallization of Doped Tungsten. 843-851A

Tungsten, Microstructure
Potassium Bubbles in Tungsten Wire. 1073-1084A

Tungsten, Powder technology
A Stereological Model of the Degree of Grain Boundary-Pore Contact During Sintering. 1497-1505A

Tungsten, Reactions (chemical)
Application of a Nonisothermal Thermogravimetric Method to the Kinetic Study of the Reduction of Metallic Oxides. II. A Theoretical Treatment of Powder Bed Reduction and Its Application to the Reduction of Tungsten Oxide by Hydrogen. 475-480B

Tungsten arc welding
See Gas tungsten arc welding

Tungsten base alloys, Atomic properties
The High-Temperature Electron Emission and Vaporization of Tungsten—Osmium Alloys. 951-958A

Tungsten base alloys, Composite materials
Preliminary Evaluation of Tensile and Stress—Rupture Behavior of Tungsten + 24 at.% Rhenium + 0.4 at.% HfC Wire. 209-214A

Tungsten base alloys, Mechanical properties
Matrix Penetration of W/W Grain Boundaries and Its Effect on Mechanical Properties of 93W—5.6Ni—1.4Fe Heavy Alloy. 2411-2416A

Tungsten base alloys, Powder technology
A Model for the Thermal Properties of Liquid-Phase Sintered Composites. 1745-1752A
Phase Equilibria Effect on the Enhanced Liquid Phase Sintering of Tungsten—Copper. 2369-2377A

Tungsten inert gas welding
See Gas tungsten arc welding

Tungsten lamps
See Incandescent lamps

Turbine blades, Casting
Three-Dimensional Probabilistic Simulation of Solidification Grain Structures: Application to Superalloy Precision Castings. 467-479A

Turbine blades, Oxidation
Service Failure of Hot-Stage Turbine Blades: the Role and Mechanisms of Oxidation Ratcheting. 2313-2319A

Turbines
See Gas turbine engines

Twinning
How Are New Orientations Generated During Primary Recrystallization?en 225-239B

Twinning, Heating effects
The Microstructural Evolution, Crystallography, and Thermal Processing of Ultrahigh Carbon Fe—1.85% C Melt-Spun Ribbon. 809-818A

Udylite process
See Electroplating

Ultimate shear strength
See Shear strength

Ultimate tensile strength
See Tensile strength

Ultrasonic testing, Automation
Small Fatigue Crack Behavior in 7075-T651 Aluminum as Monitored With Rayleigh Wave Reflection. 1773-1783A

Undercooling
See Supercooling

Uranium base alloys, Metal working
An Investigation of Superplasticity in a Thermomechanically Processed U—2Mo (α + δ) Alloy. 369-377A
An Investigation of Superplasticity in a Thermomechanically Processed U—6Nb (α + γ_2) Alloy. 379-388A

V notch Charpy impact tests
See Impact tests

V notch Charpy tests
See Impact tests

Vacancies (crystal defects)
See Lattice vacancies

Vacancies (lattice)
See Lattice vacancies

Vacuum
Intrinsic Fatigue Crack Growth Rates for Al—Li—Cu—Mg Alloys in Vacuum. 1807-1817A

Vacuum casting
Interfacial Shear Strength of Cast and Directionally Solidified NiAl—Sapphire Fiber Composites. 2119-2125A

Vanadium, Alloying elements
Microstructure and Mechanical Behavior of Al—Li—Cu—Mg Alloy 8090 Microalloyed With Vanadium and Beryllium. 95-104A
As-Cast Carbides in High-Speed Steels. 1265-1272B

Vanadium carbide, Reactions (chemical)
Discussion of "High-Temperature Thermodynamic Properties of the Vanadium Carbides V_2C and $VC_{0.73}$ Determined Using a Galvanic Cell Technique". 203-204B
Author's Reply. 205-208B

Vanadium compounds
See Vanadium carbide

Vapor deposition
Metastable Crystalline and Amorphous Structures Formed in the Cu—W System by Vapor Deposition. 1027-1037A

Vapor phases, Temperature effects
A Thermodynamic Evaluation of the Fe—Mn—N System. 629-645A

Vapor pressure
Activities in Cu_2S—FeS—SnS Melts at 1200°C. 301-308B

Vapor pressure, Temperature effects
Thermodynamics of Iron—Aluminum Alloys at 1573K. 481-486B

Vaporizing, High temperature effects
The High-Temperature Electron Emission and Vaporization of Tungsten—Osmium Alloys. 951-958A

Vaporizing, Welding effects
Calculation of Weld Metal Composition Change in High-Power Conduction Mode Carbon Dioxide Laser-Welded Stainless Steels. 145-155B

Vapors
See Metal vapors

Vehicles
See Spacecraft

Veining (structure)
See Preferred orientation

Velocity, High temperature effects
Measurement of Velocity in High-Temperature Liquid Metals. 1009-1022B

Vessels
See Pressure vessels
Storage vessels

Vickers hardness
See Diamond pyramid hardness

Viscoelasticity, Coating effects
Direct Viscoelastic Strain Relaxation Measurements With Interference Microscopy: Analysis of Sheet Metal Polymer Coatings. 1678-1681A

Viscoplasticity, Deformation effects
An Analysis of Deformation, Temperature, and Microstructure for Hot-Extruded Titanium Alloy. 139-144B

Viscoplasticity, High temperature effects
Environmental Interactions in High-Temperature Fatigue Crack Growth of Ti-1100. 1321-1332B

Viscosity
Experimental Investigation of the Phenomenon of Centrifuging of Liquids. 463-473B
Shear Rate Thickening Flow Behavior of Semisolid Slurries. 1107-1116A

Voids
Effect of Melt Cleanliness on the Properties of an Al—10 wt.% Si—10 vol.% SiC(p) Composite. 1631-1645A
Discussion of "Void Nucleation in Constrained Silver Interlayers" and "Void Growth and Coalescence in Constrained Silver Interlayers". 1877-1878A
Authors' Reply [to Discussion of "Void Nucleation in Constrained Silver Interlayers" and "Void Growth and Coalescence in Constrained Silver Interlayers"]. 1878-1879A

Voids, Pressure effects
The Effect of Superimposed Hydrostatic Pressure on Deformation and Fracture. II. Particulate-Reinforced 6061 Composites. (Conference Paper) 609-615A

Voids, Stress effects
Stress Distribution in Particulate-Reinforced Metal-Matrix Composites Subjected to External Load. 197-207A
Ductile Fracture of Mechanically Alloyed Iron—Yttria Alloys. 681-687A

Voids, Temperature effects
Temperature-Induced Transition in Ductile Fracture Appearance of a Nitrogen-Strengthened Austenitic Stainless Steel. 2521-2529A

Voids, Welding effects
Fracture Toughness Analysis of Heat-Affected Zones in High-Strength Low-Alloy Steel Welds. 1133-1141A

Volatilizing
See Vaporizing

Voltage
See Electric potential

Voltage drop
See Electric potential

Water quenching
Age-Hardening Behavior of Titanium Alloy Ti—6Al—5Zr—0.5Mo—0.25Si. 763-766A
Mathematical Model of Phase Transformations and Elasto—Plastic Stress in the Water Spray Quenching of Steel Bars. 795-808A
Solidification and Solid-State Transformation Mechanisms in Silicon Alloyed High-Chromium White Cast Irons. 981-988A
The Dendritic Growth of γ' Precipitates and Grain Boundary Serration in a Model Nickel-Base Superalloy. 1733-1743A
Matrix Penetration of W/W Grain Boundaries and Its Effect on Mechanical Properties of 93W—5.6Ni—1.4Fe Heavy Alloy. 2411-2416A

Waves
See Surface waves

Wear
See Abrasion
Adhesive wear

Wear rate, Composition effects
Tribological Characteristics of Aluminum—50 Vol.% Graphite Composite. 151-159A

Wear resistance
See also Abrasion resistance

Wear resistance, Heating effects
Microstructural Changes in As-Cast M2 Grade High Speed Steel During Hot Forging. 2171-2180A

Weld defects
The Effect of Weld Heat-Affected Zone (HAZ) Liquation Kinetis on the Hot Cracking Susceptibility of Alloy 718. 1409-1422B

Weld metal pool
The Effect of Weld Heat-Affected Zone (HAZ) Liquation Kinetis on the Hot Cracking Susceptibility of Alloy 718. 1409-1422B

Weldability
The Effects of Process Variables on Pulsed Nd:YAG Laser Spot Welds. I. AISI 409 Stainless Steel. 1065-1076B
New Explosive Welding Technique to Weld Aluminum Alloy and Stainless Steel Plates Using a Stainless Steel Intermediate Plate. 2289-2297A

Welded joints, Heat treatment
Kinetics of Grain Growth in the Weld Heat-Affected Zone of Alloy 718. 2773-2785A

Welded joints, Mechanical properties
Fracture Toughness Analysis of Heat-Affected Zones in High-Strength Low-Alloy Steel Welds. 1133-1141A
Effect of Sulfur Content on the Microstructure and Toughness of Simulated Heat-Affected Zone in Titanium-Killed Steels. 1399-1408B
The Effect of Weld Heat-Affected Zone (HAZ) Liquation Kinetis on the Hot Cracking Susceptibility of Alloy 718. 1409-1422B
New Explosive Welding Technique to Weld Aluminum Alloy and Stainless Steel Plates Using a Stainless Steel Intermediate Plate. 2289-2297A

Welded joints, Microstructure
Microstructural Modifications in an Explosively Welded Ti/Ti Clad Material. I. Bonding Interface. 735-742A
Microstructural Modifications in an Explosively Welded Ti/Ti Clad Material. II. Deformation Structures Around Bonding Interface. 743-750A
Microstructural Characterization of Incoloy 903 Weldments. 1169-1179A
Microstructural Formation in Longitudinal Bicrystal Welds. 1433-1446B
Residual Stress Measurements by X-Ray Diffraction in the Ferritic/Austenitic Interface Weldment. 2095-2106A

Welded joints, Reactions (chemical)
Diffusion Bonding of Silicon Nitride to Austenitic Stainless Steel Without Interlayers. 1835-1843A

Welding
See Fusion welding
Spot welding

Welding parameters
The Effects of Process Variables on Pulsed Nd:YAG Laser Spot Welds. I. AISI 409 Stainless Steel. 1065-1076B

Welds
See Welded joints

Wettability
Evaluation of the Wettability of Liquid Aluminum With Ceramic Particulates (SiC, TiC, Al_2O_3) by Means of Pressure Infiltration. 1423-1432B

Wetting
Four Wetting Phases in AlN/Al and AlN Composites/Al Systems, Models of Nonreactive, Reactive, and Composite Systems. 1391-1397B
Correction to "Planar to Equiaxed Transition in the Presence of an External Wetting Surface". 3361-3368A

Wetting, High temperature effects
Reaction Layer Formation at the Graphite/Copper—Chromium Alloy Interface. (Conference Paper) 53-60A

Whisker composites, Mechanical properties
Deformation-Induced Residual Stress Changes in SiC Whisker-Reinforced 6061 Aluminum Composites. 187-196A
Adiabatic Shear Band Formation in Al—SiC_w Composites. 895-900A
Strain-Rate Effects on High-Temperature Fracture Behavior of a 2124Al—SiC_w Composite. 1125-1131A
Influence of Thermally Induced Plasticity on the Bauschinger Effect of SiC/Al Composites. 1879-1882A
Theoretical Calculation of Anisotropic Creep and Stress—Strain Behavior for a Class of Metal-Matrix Composites. 2049-2059A

White iron
Effect of Microstructure on the Corrosion and Deformation Behavior of a Newly Developed 6Mn—5Cr—1.5Cu Corrosion-Resistant White Iron. 445-457A

White iron, Mechanical properties
Solidification and Solid-State Transformation Mechanisms in Silicon Alloyed High-Chromium White Cast Irons. 981-988A

Widmanstatten structure
A Transmission Electron Microscopy Study of Copper Precipitation in the Cementite Phase of Hypereutectoid Alloy Steels. 781-793A

Wiedemann-Franz law
See Lorenz number

Wiedemann-Franz ratio
See Lorenz number

Windings
See Coils (windings)

Wire
See also Electric wire

Wire, Crystal growth
The Effect of Wire History on the Coarsened Substructure and Secondary Recrystallization of Doped Tungsten. 843-851A

Wire, Mechanical properties
Preliminary Evaluation of Tensile and Stress—Rupture Behavior of Tungsten + 24 at.% Rhenium + 0.4 at.% HfC Wire. 209-214A

Wire bar
See Billets

Wire drawing, Alloying effects
Strength and Electrical Conductivity of a Deformation-Processed Cu—5 vol.% Nb Composite. (Conference Paper) 7-14A

Wolfram
See Tungsten

Work functions, High temperature effects
The High-Temperature Electron Emission and Vaporization of Tungsten—Osmium Alloys. 951-958A

Work hardening
See Strain hardening

Work strengthening
See Strain hardening

Workability
See Formability

X ray analysis
See X ray diffraction

X ray diffraction
X-Ray Elastic Constants in Textured Zirconium-Base Materials. 389-396A
Residual Strain Gradient Determination in Metal Matrix Composites by Synchrotron X-Ray Energy Dispersive Diffraction. 1117-1124A
The Oxidation of Ilmenite and Its Relationship to the FeO—Fe_2O_3—TiO_2 Phase Diagram at 1073 and 1140K. 1257-1264B
Residual Stress Measurements by X-Ray Diffraction in the Ferritic/Austenitic Interface Weldment. 2095-2106A
Determination of the Total Texture Function From Individual Orientation Measurements by Electron Backscattering Pattern. 2299-2311A

X ray diffractometer
See X ray diffraction

Yield strain
See Strain

Yield strength
Shear Rate Thickening Flow Behavior of Semisolid Slurries. 1107-1116A

Yield strength, Alloying effects
Microhardness and Compressive Mechanical Behavior of $L1_2$ Titanium Trialuminides. 935-946A

Yield strength, Composition effects
On the Flow Behavior of Constrained Ductile Phases. 403-415A

Yield strength, Cooling effects
Improved Model to Predict Properties of Aluminum Alloy Products After Continuous Cooling. 2417-2427A
Continuous Cooling Deformation Testing of Steels. 2657-2665A

Yield strength, Deformation effects
The Absence of Relative Grain Translation During Superplastic Deformation of an Al—Li—Mg—Cu—Zr Alloy. 1085-1093A
Influence of Strain Rate on Interpass Softening During the Simulated Warm Rolling of Interstitial-Free Steels. 1543-1553A
Particulate Fracture During Deformation of a Spray Formed Metal-Matrix Composite. 1575-1588A
Simulated Hot Working, Cold Working, and Annealing of Aluminum-Containing Steels. 1589-1596A
Computer Simulation of the Forging of Fine Grain IN-718 Alloy. 2061-2071A
Effect of Deformation Parameters on the No-Recrystallization Temperature in Niobium-Bearing Steels. 2151-2159A

Yield strength, Environmental effects
Effects of Hydrogen on the Mixed Mode I/III Toughness of a High-Purity Rotor Steel. 1450-1451B

Yield strength, Heating effects
Transmission Electron Microscopy Examination of Hardening and Toughening Phenomena in Aermet 100. 1943-1955A
Elastic Limit and Microplastic Response of Hardened Steels. 2263-2277A

Yield strength, High temperature effects
The Effects of Prolonged Thermal Exposure on the Fracture and Fatigue Behavior of Aluminum—Lithium Alloy 8090. 2233-2245A

Yield strength, Microstructural effects
A Dislocation Shielding Model for the Fracture of Semibrittle Polycrystals. 343-350A
An Investigation of Superplasticity in a Thermomechanically Processed U—6Nb (α + γ_2) Alloy. 379-388A
An Analytical Description for the Deformation Response of Ni_3Al Alloys in the Anomalous Regime. 397-401A
A Dislocation Shielding Prediction of the Toughness Transition During Cleavage of Semibrittle Crystals. (Conference Paper) 535-543A
The Combined Effect of Grain Size and Strain Rate on the Dislocation Substructures and Mechanical Properties in Pure Aluminum. 1153-1161A
Characterization of Room-Temperature Damping in Aluminum—Indium Alloys. 1611-1619A
Effect of Melt Cleanliness on the Properties of an Al—10 wt.% Si—10 vol.% SiC(p) Composite. 1631-1645A
Morphological Effect on the Mechanical Behavior of a Two-Phase Ti_3Al—Nb Alloy. 1785-1793A
Discussion of "Void Nucleation in Constrained Silver Interlayers" and "Void Growth and Coalescence in Constrained Silver Interlayers". 1877-1878A

Scaling Laws for Fatigue Crack Growth of Large Cracks in Steels. 2473-2486A
Microstructural Features of Flow Instability in α-Titanium Cylinders Under High Strain Rate Compression at 25-400°C. 2513-2520A
The Effect of Grain Size and Strain Rate On the Substructures and Mechanical Properties in Nickel 200. 2559-2568A

Yield strength, Orientation effects
The Mechanical Behavior of Directionally Solidified Al—Ni in Compression. 713-719A

Yield strength, Pressure effects
The Effects of Superimposed Hydrostatic Pressure on Deformation and Fracture. I. Monolithic 6061 Aluminum. (Conference Paper) 601-608A
The Effect of Superimposed Hydrostatic Pressure on Deformation and Fracture. II. Particulate-Reinforced 6061 Composites. (Conference Paper) 609-615A
Strain Path Change Effects in the Local Necking of Aluminum Sheet and in the Tension of Internally Pressurized Tubes. 2691-2699A

Yield strength, Stress effects
Ductile Fracture of Mechanically Alloyed Iron—Yttria Alloys. 681-687A
Failure Diagrams for Unidirectional Fiber Metal-Matrix Composites. 1531-1542A
Correction to "Failure Diagrams for Unidirectional Fiber Metal-Matrix Composites". 1531-1542A
Influence of Thermally Induced Plasticity on the Bauschinger Effect of SiC/Al Composites. 1879-1882A
Numerical Analysis of the Hot Tension Test. 2039-2047A
On the Development of Constitutive Relations for Metallic Powders. 2071-2081A
Residual Stresses and Their Effects on Deformation in Particle-Reinforced Metal-Matrix Composites. 2487-2496A
Calculations of Forming Limit Diagrams for Changing Strain Paths. 2497-2501A
The Effects of Combined Strain-Path and Strain-Rate Changes in Aluminum. 2679-2689A

Yield strength, Temperature effects
Temperature-Induced Transition in Ductile Fracture Appearance of a Nitrogen-Strengthened Austenitic Stainless Steel. 2521-2529A
Temperature Dependence of Strain Hardening in a Dispersion-Strengthened Al—Fe—V—Si Alloy. 2589-2593A
Surface Preparation and Bend Ductility of NiAl. 2593-2596A

Yield strength, Welding effects
Fracture Toughness Analysis of Heat-Affected Zones in High-Strength Low-Alloy Steel Welds. 1133-1141A

Yield stress
See Yield strength

Youngs modulus
See Modulus of elasticity

Yttrium compounds, Composite materials
Ductile Fracture of Mechanically Alloyed Iron—Yttria Alloys. 681-687A

Zeolites
See Ion exchange resins

Zinc, Alloying elements
Correction to "Beam Focusing Characteristics and Alloying Element Effects on High-Intensity Electron Beam Welding". 81-90B

Zinc, Extraction
Extraction of Zinc Chloride With Dibutyl Butylphosphonate. 11-15B
Experimental and Theoretical Analysis of Zinc Updraft Sintering. 27-38B
Use of X-Ray Diffraction in a Study of Ammonia Leaching of Multimetal Sulfides. 937-945B
An Improved Computer Program for Equilibrium Calculations. 1882-1889A

Zinc, Phases (state of matter)
Thermodynamics of the Zinc—Sulfur Dioxide—Water System. 409-417B

Zinc, Reduction (chemical)
Microstructural Changes on the Reduction of Imperial Smelting Furnace Sinters. 39-51B
Zinc Smelting With Coal as the Principal Heat Source and Reducing Agent. 593-598B

Zinc base alloys, Casting
Thermodynamic Properties of Zinc-Rich Zinc—Aluminum Melts. 1037-1044B

Zinc plating
See Galvanizing

Zirconates, Composite materials
A Structural Study of Oxidation in a Zirconia-Toughened Alumina Fiber-Reinforced Fe_3Al Composite. 435-443A

Zirconium base alloys, Mechanical properties
X-Ray Elastic Constants in Textured Zirconium-Base Materials. 389-396A

Zirconium base alloys, Phases (state of matter)
Unusual Morphology of the Omega Phase in a Zirconium—1.75 at.% Nickel Alloy. 495-501A

Zirconium base alloys, Reactions (chemical)
Calorimetrically Measured Enthalpies for the Reaction of H_2 (g) With Zirconium and Zirconium Alloys. 1471-1479A

Zirconium compounds
See Zirconates